

**LEAD-R 420-13**

# **DEPOT FIRE PREVENTION PROGRAM**

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**FIRE - AMBULANCE**

**EMERGENCY TELEPHONE NUMBER**

**911**

**13 AUGUST 2004**

Department of the Army  
Letterkenny Army Depot  
Chambersburg, PA 17201-4150

\*LEAD Regulation 420-13

7 September 2004

Fire and Emergency Services

### **Depot Fire Prevention Regulation**

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**Applicability.** This regulation applies to all civilian and military personnel located on the depot, all collocated activities, family housing occupants and unaccompanied personnel housing residents.

**Supplementation.** Issue of further supplement to this regulation by subordinate commander is prohibited without prior approval from Commander, LEAD, ATTN: AMSAM-LE-SS-FD.

**Suggested Improvements.** The proponent agency of this publication is Letterkenny Army Depot, Directorate of Risk Management, Fire and Emergency Services Division. Users are invited to send comments to Chief, Fire and Emergency Services Division, ATTN: AMSAM-LE-SS-FD, Chambersburg, PA 17201-4150.

**Distribution.** E5, AMSAM-LE-SS-FD (50), Official Bulletin Boards, LEAD Intranet.

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## Chapter 1

### General

**1-1. Purpose.** This regulation prescribes minimum requirements necessary to establish a reasonable level of fire safety and property protection from the hazards created by fire and explosion and protect firefighters and emergency responders.

**1-2. References.** References used in this regulation appear in Appendix A.

**1-3. Explanation of Abbreviations and Terms.** Abbreviations and special terms used in this regulation are explained in the glossary.

**1-4. Scope.** The provisions of this regulation are applicable to:

- a. The inspection of buildings, processes, equipment, systems, and other fire and related life safety situations.
- b. The investigation of fires, explosions, hazardous materials incidents and other related emergency incidents handled by the fire department.
- c. The review of construction plans, drawings, and specifications for life safety systems, fire protection systems, access, water supplies, processes, and hazardous materials and other fire and life safety issues.
- d. The fire and life safety education of employees.
- e. Existing occupancies and conditions, the design and construction of new buildings, remodeling of existing buildings, and additions to existing buildings.
- f. The storage, use, processing, handling and transportation of hazardous materials.
- g. Design, alteration, modification, construction, maintenance and testing of fire protection systems and equipment.
- h. Access requirements for fire department operations.
- i. Hazards from outside fires in vegetation, trash, building debris and other materials.
- j. The regulation and control of special events including but not limited to exhibits, trade shows and other similar special occupancies.
- k. The interior finish, decorations, furnishings, and other combustibles that contribute to fire spread, fire load, and smoke production.

**1-5. Authority.** This regulation shall be administered by the fire department and enforced by managers, supervisors, building custodians and employees of the depot.

- a. Deviations or waivers from the principles set forth herein are not permitted.



b. A copy of this regulation will be permanently and prominently posted on all official bulletin boards. When otherwise required, this regulation will be readily accessible to all personnel concerned.

c. Imminent danger refers to a condition where a substantial probability exists that death or serious physical harm will result immediately before the imminence of such danger can be eliminated through normal action. Imminent danger conditions will be corrected immediately. If immediate correction is not possible, the operation will be halted.

d. Equipment involving an imminent danger situation will be appropriately locked-out/tagged-out by the fire department. Once shutdown, only the fire department shall be permitted to restore operations when the hazard involved is corrected satisfactorily.

e. Failure to correct a known hazard can result in personal liability on the part of responsible officials in event injury or damage results from the conscious failure to correct a hazard.

f. The fire department shall have the authority to order the immediate evacuation of any occupied building deemed unsafe when such building has hazardous conditions that present imminent danger to building occupants.

**1-6. Liabilities.** Failure to correct a known hazard can result in personal liability on the part of responsible officials in the event injury or damage results from the conscious failure to correct the hazard.

a. Individual pecuniary liability could result from co-employee civil suits if an employee is injured and it is determined that a responsible official's intentional failure to correct an existing hazard constituted action beyond the scope of his/her employment.

b. Individual pecuniary liability could also be imposed under the report of survey system should government property be damaged because of failure to correct the existing hazard.

#### **1-7. Equivalencies and Alternatives.**

a. Nothing in this regulation is intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety to those prescribed by this regulation, provided technical documentation is submitted to the Fire and Emergency Services Division to demonstrate equivalency and the system, method, or device is approved for the intended purpose.

b. The specific requirements of this regulation may be modified by the authority having jurisdiction to allow alternative arrangements that will secure as nearly equivalent fire safety as practical, but in no case shall the modification afford less fire safety than, in the judgment of the authority having jurisdiction, that which would be provided by compliance with the corresponding provisions contained in this regulation.

**1-8. Occupancy.** No new construction or existing building with renovations or change in occupancy shall be occupied in whole or in part without prior inspection and approval of the authority having jurisdiction.

**1-9. Maintenance and Testing of Equipment.** Whenever or wherever any device, equipment, system, condition, arrangement, level of protection or any other feature is required for compliance with the provisions of this regulation, they shall thereafter be permanently maintained unless this regulation exempts such maintenance.

a. Every required automatic sprinkler system, fire detection and alarm system, smoke control system, exit lighting, fire door, and other item of equipment required by this regulation shall be continuously maintained in proper operating condition.

b. Systems shall be tested at intervals required by the appropriate standard listed in the references.

c. Periodic Testing of Emergency Lighting Equipment. Testing shall be in accordance with the following:

(1) Functional testing shall be conducted at 30-day intervals for not less than 30 seconds.

(2) Functional testing shall be conducted annually for not less than 1 ½ hours if the emergency lighting system is battery powered.

(3) The emergency lighting equipment shall be fully operational for the duration of the tests required.

(4) Written records of visual inspections and tests shall be kept by the owner for inspection.

#### **1-10. Records and Reports.**

a. A record of examinations, approvals and variances granted shall be maintained by the activity and shall be available for inspection by the fire department.

b. The activity shall keep a record of all fire prevention inspections, including the date of such inspections and a summary of any violations found to exist, the date of the services of notices, and a record of the final disposition of all violations.

**1-11. Incident Commander.** The incident commander of emergency services will be the Fire Chief.

a. The incident command conducting operations in connection with the extinguishment and control of any fire, explosion or other emergency shall have authority to direct all operations of fire extinguishment or control and to take the necessary precautions to save life, protect property, and prevent further injury or damage. During such operation, including the investigation of the cause of such emergency, the incident commander may control or prohibit the approach to the scene of such emergency by any vehicle or person.

b. No person shall obstruct the operations of the fire department in connection with extinguishing or control of any fire, or actions relative to other emergencies, or disobey any lawful command of the incident commander in charge of the emergency, or any part thereof, or any lawful order of a police officer assisting the fire department.

c. The incident commander in charge of an emergency scene shall have the authority to establish barriers to control access near such emergency and to place, or cause to be placed, ropes, guards, barricades, or other obstruction across any street or alley to delineate such emergency scene barrier. No person, except as authorized by the incident commander in charge of the emergency, may cross such barriers.

**1-12. Depot Fire Marshal.** The Director of Public Works will provide guidance to the fire and emergency service program for the installation commander.

**1-13. Occupant/Activity Responsibilities.** The activity fire marshal, supervisors and activity manager shall serve as control points for compliance with this regulation.

a. An activity fire marshal will be assigned for each directorate or tenant activity. The duties of the activity fire marshal will include:

- (1) Meet quarterly with the Fire and Emergency Services Division.
- (2) Assign building fire marshals to those areas that cannot be adequately controlled by the activity fire marshal.
- (3) Conduct general fire inspections each reportable calendar month in areas not assigned to building fire marshals.
- (4) Submit one copy of the monthly fire inspection to the fire department within three working days after the last day of the preceding month.
- (5) Perform monthly fire extinguisher inspections.
- (6) Prepare fire prevention instructions to include a floor plan showing evacuation routes, the location of fire extinguishers and fire alarm pull stations, the action required for individual personnel upon sounding of a fire alarm, special fire prevention measures that may be required in the area, and an accountability system of personnel. This plan will be updated as changes occur.

**1-14. Fire Reporting.** The person discovering an emergency, regardless of its type, extent, or damage, will immediately notify the fire department, simultaneously alerting the building occupants whenever feasible. When occupants are jeopardized, they will be warned first; otherwise, notification of the fire department will take precedence. Fires will be reported to the fire department by the fastest and most expedient means available.

a. Reporting procedures.

- (1) Dial 911 on the nearest telephone. State that you are reporting an emergency and relate that you are located at Letterkenny Army Depot and need to report an emergency. All 911 calls are answered and dispatched by the Franklin County Emergency Communications Center.
- (2) Give site (building designation and exact location within the structure).
- (3) Give nature of the emergency.
- (4) Give name of person reporting the emergency.
- (5) Give details about the emergency.
- (6) Have someone wait for the fire department to arrive and direct them to the scene.

b. The fire department radio base station has capabilities of communicating with Security, Ammunition, Directorate of Supply and Transportation and Directorate of Public Works. An emergency

may be communicated to the fire department in this manner.

c. No person shall make, issue, post or maintain any order, written or verbal, that would require any person to take any unnecessary delaying action before reporting a fire to the fire department.

d. No person shall deliberately or maliciously turn in an alarm of fire when in fact that person knows that no fire exists.

**1-15. Tampering With Fire Safety Equipment.**

a. No person shall render any portable or fixed fire extinguishing system or device or any fire warning system inoperative or inaccessible except as may be necessary during emergencies, maintenance, drills, or prescribed testing.

b. No person, except a person authorized by the fire department, shall remove, unlock, destroy, or tamper with in any manner any locked gate, door, or barricade, chain, enclosure, sign, tag, or seal that has been required by the fire department pursuant to this regulation.

**1-16. Plans Review.** For new construction, modification or rehabilitation, the fire department shall have the authority to review construction documents and shop drawings.

a. It is the responsibility of the activity to ensure:

(1) That the construction documents include all of the fire protection requirements.

(2) That the shop drawings are correct and in compliance with the applicable codes and standards.

b. It is the responsibility of the fire department to promulgate rules that cover:

(1) Review documents and shop drawings for the purpose of acceptance or provide reason of non-acceptance within established periods.

(2) Review and approval by the fire department shall not relieve the applicant of the responsibility of compliance with this regulation.

## Chapter 2

### Fire Protection Equipment and Maintenance

**2-1. Fire Protection Equipment.** Emergency firefighting equipment and accessories will be conspicuously located, readily accessible and properly distributed in relation to fire hazards and safety requirements.

**2-2. Fire Extinguishers.** When required, locations for fire extinguishers will be identified by signs and/or by painting adjacent walls and floors with fire red paint. Installed equipment will not be removed from approved locations except for fire suppression, fire drills, inspections, servicing, or replacement, without approval of the fire department.

a. At no time will unauthorized personnel make any changes in fire protection equipment, nor will they in any way render such equipment inoperative or ineffective.

b. Adequate space (three feet minimum) for accessibility to firefighting equipment will be maintained, and any damage to such equipment will be immediately reported to the fire department.

c. Whenever an extinguisher has been operated (discharged), this information will be reported to the fire department immediately.

**2-3. Fire Doors.** Fire doors will be closed each day upon termination of business or vacation of structures unless otherwise exempted by the fire department. Fire doors will be closed whenever fires or fire alarm signal sounds, remaining open only as long as necessary for evacuation. Conveyors and material will be arranged so as not to interfere with the operation of fire doors.

a. Access aisles will be maintained at all times. Material will not be stored within 36 inches of fire door openings.

b. Fire doors will not be locked or tied open. They will be either fully opened or fully closed.

c. Damage to fire doors will be immediately reported to the fire department.

**2-4. Water Mains and Valves.** No mains or associated valves will be closed without prior notification to the fire department. Upon resumption of service, the fire department will again be notified.

**2-5. Fire Hydrants.** No vehicle will be parked within 15 feet of a fire hydrant. No material or other obstructions will be placed within a 15-foot radius.

**2-6. Sprinkler Systems.** All automatic sprinkler systems will be inspected and tested under the direction and supervision of the fire chief in accordance with criteria set forth in NFPA Standards 13 and 15.

a. The clearance below sprinkler heads will be at least 18 inches. Where warehouse stacks exceed 15 feet in height or involve hazardous commodities, the minimum clearance will be 36 inches.

b. No material will obstruct a sprinkler system post indicator valve.

c. No vehicle or material shall be parked or placed within 4 feet of sprinkler system valvehouse entrance doors to ensure accessibility and no obstructions within 15 feet in front of valve house.

d. No alteration or modification will be made to any building equipped with a sprinkler system without prior approval of the fire department. Such approval will only be granted when plans for alteration or modification include plans to maintain full and complete sprinkler coverage.

e. Sprinkler heads will not be painted.

f. Sprinkler piping will not be used as supports, hangers, etc.

## **2-7. Required Access For Fire Apparatus.**

a. All premises that the fire department may be called upon to protect in case of fire and which are not readily accessible from public roads shall be provided with suitable gates, access roads and fire lanes so that all buildings on the premises are accessible to fire apparatus.

b. Fire lanes shall be provided for all buildings which are set back more than 150 feet from a public road or exceed 30 feet in height and are set back over 50 feet from a public road.

c. Fire lanes shall be at least 20 feet in width for existing buildings and 25 feet for new buildings with the road edge closest to the building at least 10 feet from the building. Any dead-end road more than 600 feet long shall be provided with a turn-around at the closed end at least 60 feet in diameter.

d. It shall be unlawful for any person to park motor vehicles in or otherwise obstruct any fire lane.

e. Fire lanes shall be marked with freestanding signs or marked curbs, sidewalks, or other traffic surfaces that have the words "FIRE LANE - NO PARKING" painted in contrasting colors at a size and spacing approved by the fire department.

f. Fire lanes shall be maintained free of all obstructions at all times.

## Chapter 3

### General Fire Safety Requirements

**3-1. Fundamental Requirements.** Every new and existing building or structure shall be constructed, arranged, equipped, maintained and operated in accordance with this Code so as to provide a reasonable level of life safety, property protection, and public welfare from the actual and potential hazards created by fire, explosion, and other hazardous conditions.

Buildings shall have approved address numbers placed in a position to be plainly legible and visible from the street or road fronting the property. Address numbers shall contrast with their background.

**3-2. Fire Exit Drills.** Fire exit drills shall be conducted regularly in occupancies where specified in the National Fire Protection Agency (NFPA) Codes and Standards or by appropriate action of the fire department.

#### **3-3. Emergency Lighting and Exit Signs/Lights**

a. Any alterations or modifications to a building or facility that will reduce the effectiveness of emergency lighting or exit signs must include provisions to modify, add to or replace such equipment to provide and maintain current standards for lighting and signs.

b. Internally illuminated exit signs must be lighted at all times the building is occupied.

c. Any failure of exit sign lighting or emergency lighting will be reported immediately for repair or replacement.

d. Ionizing radiation shall not be used as a lighting source for any exit sign.

#### **3-4. Factors Affecting Egress.**

a. No furnishings, decorations, or other objects shall be so placed as to obstruct exits, access thereto, egress therefrom, or visibility thereof.

b. Hangings or draperies shall not be placed over exit doors or otherwise be located to conceal or obscure any exit. Mirrors shall not be placed on exit doors. Mirrors shall not be placed in or adjacent to any exit in such a manner as to confuse the direction of exits.

c. There shall be no obstruction by railings, barriers or gates that divide the open space into sections appurtenant to individual rooms, apartments or other uses. Where the fire department finds the required path of travel to be obstructed by furniture or other movable objects, they may require that railings or other permanent barriers be installed to protect the path of travel from encroachment.

d. No person shall fail to leave any overcrowded premises when told to do so by the management of the premises or the fire department. Premises are deemed overcrowded when the occupant load exceeds the exit capacity or the posted occupant load.

**3-5. Locks, Latches and Alarm Devices.** Arrange doors to be readily opened from the egress side. Locks, if provided, shall not require the use of a key, tool, special knowledge or effort for operation from the inside of the building.

a. Exception: Exterior doors shall be permitted to have key-operated locks from the egress side, provided:

(1) On the egress side, on or adjacent to the door, there shall be a readily visible, durable sign that reads "THIS DOOR TO REMAIN UNLOCKED WHEN THE BUILDING IS OCCUPIED." The sign will be in letters not less than 1 inch high on a contrasting background.

(2) The locking device shall be of a type that is readily distinguishable as locked.

(3) A key shall be immediately available to any occupant inside the building when it is locked. This exception will be revoked by the fire department for cause.

b. Refer to Chapter 7 of NFPA 101, Code for Safety to Life from Fire in Buildings and Structures, for special locking arrangements, access controlled egress doors, panic hardware and fire exit hardware, self-closing devices, power-operated doors and horizontal sliding doors.

### **3-6. Electrical Fire Safety.**

a. This section shall apply to new, existing, permanent, or temporary electrical appliances, fixtures, or wiring.

b. All electrical appliances, fixtures or wiring shall be maintained in accordance with NFPA 70, National Electric Code.

c. Permanent wiring abandoned in place shall be tagged or otherwise identified at its termination and junction points as "Abandoned in Place" or removed from all accessible areas and insulated from contact with other live electrical wiring or devices.

**3-7. Smoking.** Where smoking is considered a fire hazard, the fire department shall be authorized to order, in writing, to post "No Smoking" signs in conspicuous designated locations where smoking is prohibited. In areas where smoking is permitted, noncombustible ashtrays shall be provided.

### **3-8. Open Outdoor Fires, Cooking Grills, and Barbecue Fireplaces.**

a. Open fires are permitted only at the Recreation Area with authorization from the Chief, Fire and Emergency Services and shall be constantly attended by a competent person until such fire is extinguished.

b. The fire department may prohibit open fires when atmospheric conditions or local circumstances make such fires hazardous.

c. During the period of the year declared by the fire department to be the dry season, it shall be unlawful to set fires to any brush or forest covered land.

d. Cooking/barbecue grills shall not be maintained within 10 feet of combustible structures. Appropriate fire extinguishing equipment shall be available on site.

### **3-9. Commercial Cooking Equipment.**

a. Commercial cooking equipment that produces smoke or grease-laden vapors shall be equipped



with an exhaust system. Such exhaust system, including hoods, grease removal devices, ducts, dampers, air-moving devices, auxiliary equipment and fire extinguishing equipment, shall be designed, constructed, and installed in conformance with NFPA 96, Standard for the Installation of Equipment for the Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment.

b. Hoods, grease extractors and ducts shall have a clearance of at least 18 inches to combustible material, 3 inches to limited-combustible material and 0 inches to noncombustible material.

c. Hoods, grease removal devices, fans, ducts, and other appurtenances shall be cleaned to bare metal at frequent intervals prior to surfaces becoming heavily contaminated with grease or oily sludge. They shall be inspected at least every six months.

d. Flammable solvents or other flammable cleaning aids shall not be used.

e. At the start of the cleaning process, electrical switches that may be accidentally activated shall be locked out.

f. Care shall be taken not to apply cleaning chemicals on fusible links or other detection devices of the automatic extinguishing system.

g. Deep fat fryers shall be equipped with a separate high limit control in addition to the adjustable operating control (thermostat) to shut off fuel or energy when the fat temperature reaches 475 degrees Fahrenheit, 1-inch below the surface.

### **3-9. Combustible Waste and Refuse.**

a. No person shall allow any combustible waste material to accumulate in any area or in any manner to create a fire hazard to life or property. Noncombustible, covered-type containers will be used for collection and storage of combustible material. Covers will be kept in place except when trash is being deposited or removed. Open-top metal wastepaper baskets may only be used in offices.

b. Operations using readily combustible materials such as shavings, straw, excelsior and similar combustible material shall assure that only the quantity immediately necessary is in the work area and the work area shall be thoroughly cleaned at least twice each workday and the area will be left in a clean condition at the end of the each workday.

**3-10. Tar Kettles.** This section shall apply to any type of equipment, including, but not limited to, chassis-mounted equipment used for preheating or heating tar, asphalt, pitch, or similar substances for roofs, floors, pipes or similar objects.

a. Kettle requirements include:

- (1) An open flame permit issued by the fire department is required prior to use of the equipment.
- (2) Operating kettles shall not be located inside of, or on the roof of, any building.
- (3) The kettle shall be operated in a controlled area. The area shall be identified by the use of traffic cones, barriers, and other suitable means as approved by the fire department.
- (4) An operating kettle shall be attended by a minimum of one employee knowledgeable of the

operations and hazards. The employee shall be within 25 feet of the kettle and have the kettle within sight.

(5) Two approved, 20:BC fire extinguishers shall be provided and maintained within 25 feet of the operating kettle. Fire extinguishers shall be mounted in an accessible and visible or identified location.

(6) Roofing kettles shall not block exits, means of egress, gates, roadways or entrances. In no case shall kettles be closer than 10 feet from exits or means of egress.

b. Fuel Systems.

(1) Fuel containers shall be constructed and approved for the use for which they were designed.

(2) Liquefied Petroleum Gas (LPG) containers, hose, regulators and burners shall conform to the specifications in NFPA 58, Liquefied Petroleum Gas Code.

(3) LPG cylinders shall be secured to prevent accidental tip over.

(4) LPG cylinders, hose, regulators, and burners shall conform to the requirements found elsewhere in this regulation.

(5) Regulators shall be required on any cylinders.

c. Maintenance.

(1) Roofing kettles and all integral working parts shall be in good working condition and shall be maintained free of excessive residue.

(2) All piping used for pumping heated material to the roof shall be installed in a manner to prevent loss of heated material.

(3) Flexible steel piping shall not be used on the vertical extension of piping systems.

(4) Flexible steel piping shall be limited to those connections that are immediately adjacent to the pump kettle or discharge outlet. No single length of flexible piping shall exceed 6 feet in length, and all piping shall be able to withstand a pressure of at least 4 times the working pressure of the pump.

(5) All roofing kettles shall have doors permanently attached. Doors shall be installed in a competent manner and shall be provided with handles to provide opening without the operator having to stand in front of it.

(6) All kettles shall have an approved working visible temperature gauge that indicates the temperature of the material being heated.

(7) All kettle doors shall be tightly closed and latched when in transit.

d. Construction. The materials and methods of construction of roofing kettles shall be acceptable to the fire department. The following are minimum requirements:

(1) This section shall apply to all roofing kettles or tar pots in excess of 1-gallon capacity.

(2) No roofing kettle shall have a capacity in excess of 5 barrels.

(3) Roofing kettles of 2-barrel capacity or less shall be constructed of steel sheet having a thickness of not less than 0.105 inches (No. 12 Manufacturers' Standard Gage), and kettles of more than 2-barrel capacity shall be constructed of steel sheet having a thickness of not less than 0.135 inches (No. 10 Manufacturers' Standard Gage). All supports, corners, and the top and bottom of the firebox shall be bound with angle iron or other reinforcements approved by the fire department. All doors shall be hinged, closely fitted and adequately latched. Fireboxes shall be of sufficient height from the ground or provided with a system of shields or insulation to prevent heat damage to the street surface.

(4) Lids that can be gravity operated shall be provided on all roofing kettles. The tops and covers of all kettles shall be constructed of steel sheet having a thickness of not less than 0.075 inches (No. 14 Manufacturers' Standard Gage), close fitting, and attached to the kettle with hinges in a manner allowing for gravity closing of the lid.

(5) The chassis shall be substantially constructed and capable of carrying the load imposed upon it whether standing still or being transported.

(6) Fuel containers, burners, and related appurtenances of roofing kettles in which liquefied petroleum gas is used for heating shall comply with all the requirements of NFPA 58.

(7) Fuel containers that operate under air pressure shall not exceed 20 gallon in capacity and shall be subject to the approval of the authority having jurisdiction.

### **3-11. Vacant Buildings.**

a. Activities vacating any building, structure, facility or area shall remove all combustible storage, waste, refuse, and vegetation shall be removed and the building will be locked to include windows, doors and other openings to prohibit entry by unauthorized persons. The area shall be left in a clean, neat and safe condition.

b. Heat shall be maintained in all vacant buildings protected by a wet pipe sprinkler system until such time as the sprinkler system can be totally drained to prevent freezing.

### **3-12. Storage.**

a. Storage of combustible material in spaces or closets located under stairways constructed wholly or in part of combustible materials is prohibited. Materials will not be placed or stored on stairway landings.

b. Storage of any item will not be permitted in an aisle or hallway designated for exiting purposes.

## Chapter 4

### Life Safety

**4-1. General Requirements.** Means of egress in new and existing buildings shall comply with this regulation and the referenced edition of NFPA 101, Code for Safety to Life from Fire in Buildings and Structures.

**4-2. Places of Public Assembly.** Persons directly responsible for assembled groups will inspect the area prior to start of business to ensure that no fire hazards are present, exit doors are unlocked, aisles free of obstructions, exit lights operational, and the area is safe for occupancy.

**4-3. Close of Business Inspection.** Activity personnel shall be responsible for the condition of the area upon close of business. A thorough inspection will be conducted to include:

- a. Inspect receptacles containing discarded trash and ensure their removal from the building.
- b. Ensure that all ashtrays or receptacles containing discarded smoking materials have been emptied into approved metal containers and that such materials no longer constitute a fire hazard.
- c. Appliances of all types, to include but not limited to, grills, coffee makers and stoves shall be disconnected (unplugged) or circuit switched off.
- d. Close all windows and doors.
- e. Exhaust hoods and ducts serving cooking ranges, grills, and deep fat fryers shall be cleaned of accumulated grease build-up.

#### 4-4. Exit Details

- a. An exit door shall be of the swinging type and swing with the exit travel.
- b. Required panic hardware shall not be equipped with any locking device, set screw, or other arrangement that can be used to prevent the release of the latch when pressure is applied to the bar or prevents the free use of the door for exit purposes.
- c. Every required exit shall be marked by a readily visible sign. Readily visible signs shall mark access to exits.
- d. Emergency lighting shall be provided in the means of egress.
- e. Exit doors and all aisles, passageways, and stairways leading thereto, unless doorways are authorized to be blocked and are properly marked, will be unobstructed and accessible to building occupants at all times. No person shall block, impede, or obstruct any entrance or exit required by law that will prevent, delay, hinder, or interfere with the free use of such passageways by any person. Special security devices that effect the exiting shall be subject to the approval of the authority having jurisdiction.
- f. A minimum clearance of 44 inches wide will be maintained for exit and egress aisles.

**4-5. Decorations.** Combustible decorative material, including curtains, draperies, cotton batting, streamers, and other decorations of paper, cardboard, plywood, cloth, or flammable plastic will be flame retardant and approved by the authority having jurisdiction prior to installation.

- a. Straw, leaves, and similar dry plant materials will not be used for interior decorative purposes.
- b. The use of candles, lamps or similar devices producing a flame for decorative purposes is strictly prohibited unless specifically permitted by other portions of this regulation.

**4-6. Christmas Trees.**

- a. Natural Christmas trees shall not be permitted in any building, with the exception being family housing.
- b. Artificial Christmas trees shall be labeled or otherwise identified or certified by the manufacturer as being "flame retardant" or "flame resistive."
- c. No Christmas trees shall be allowed to obstruct corridors, exit ways or other means of egress.
- d. Only listed electrical lights and wiring shall be used on Christmas trees and similar decorations.
- e. Electrical lights are prohibited on metal artificial trees.
- f. Candles shall not be permitted for use on the depot.

## Chapter 5

### Portable Fire Extinguishers

**5-1. General Requirements.** Portable fire extinguishers used to comply with this section shall be listed and labeled. NFPA Standard 10, Standard for Portable Fire Extinguishers, shall be referenced.

**5-2. Special Definitions.**

a. Class A Fire. Fire in ordinary combustible materials, such as wood, cloth, paper, rubber and many plastics.

b. Class B Fire. Fire in flammable liquids, oils, greases, tars, oil-base paints, lacquers and flammable gases.

c. Class C Fire. Fire that involve energized electrical equipment where the electrical non-conductivity of the extinguishing media is of importance. (When electrical equipment is de-energized, extinguishers for (Classes A and B fires may be used safely.)

d. Class D Fire. Fire in combustible metals, such as magnesium, titanium, zirconium, sodium, lithium and potassium.

**5-3. Specific Requirements for all Extinguishers.**

a. The classification of extinguishers shall consist of a LETTER that indicates the class of fire on which an extinguisher has been found to be effective, preceded by a rating NUMERAL (Class A and B only) that indicates the relative extinguishing effectiveness.

b. Portable extinguishers shall be maintained in a fully charged and operable condition and kept in their designated places when they are not being used.

c. Extinguishers shall be conspicuously located where they will be readily accessible and immediately available in the event of fire. Preferably, they shall be located along normal paths of travel, including exits from areas.

d. Cabinets housing extinguishers shall not be locked.

e. Extinguishers shall not be obstructed or obscured from view.

f. Extinguishers shall be installed on the hangers or in the brackets supplied or mounted in cabinets unless the extinguishers are of the wheeled type.

g. Extinguishers installed under conditions where they are subject to physical damage shall be protected from impact.

h. Extinguishers having a gross weight not exceeding 40 pounds shall be installed so that the top of the extinguisher is not more than 5 feet above the floor. Extinguishers having a gross weight greater than 40 pounds (except wheeled types) shall be installed so that the top of the extinguisher is not more than 3 1/2 feet above the floor. In no case shall the clearance between the bottom of the extinguisher and the floor be less than 4 inches.

## Chapter 6

### Assembly Occupancies

**6-1. General Requirements.** New and existing assembly occupancies shall comply with this chapter and the referenced edition of NFPA 101, Code for Safety to Life from Fire in Buildings and Structures, and American Disability Act.

**6-2. Operating Features and Drills.** The employees or attendants of places of public assembly shall be schooled and drilled in the duties they are to perform in case of fire, panic, or other emergency in order to be of greatest service in effecting orderly exiting. Employees or attendants of assembly occupancies shall be instructed in the proper use of portable fire extinguishers and other manual fire suppression equipment if provided.

**6-3. Special Food Service Devices.** Portable cooking equipment that is not flue connected shall be permitted only as follows:

a. Equipment fueled by small heat sources that can be readily extinguished by water, such as candles or alcohol burning equipment (including "solid alcohol"), may be used provided adequate precautions satisfactory to the fire department are taken to prevent the ignition of any combustible materials.

b. Candles may be used on tables if securely supported on substantial noncombustible bases so located as to avoid danger of ignition of combustible materials and only if approved by the fire department. Candle flames shall be protected.

**6-4. Furnishings, Decorations and Stage Scenery.** Draperies, curtains, and other similar furnishings and decorations shall be flame resistant. These materials must be tested in accordance with NFPA Standard 701 Fire Tests for Flame Propagation of Textiles and Films, shall comply with both small and large-scale tests.

a. Furnishings or decorations of an explosive or highly flammable character shall not be used.

b. Fire retardant coatings shall be maintained to retain the effectiveness of the treatment under service conditions encountered in actual use.

c. The fire department shall impose controls on the amount and arrangement of combustible contents in assembly occupancies to provide an adequate level of life safety from fire.

d. Exposed foamed plastic materials and unprotected materials containing foamed plastic used for decorative purposes or stage scenery shall have a maximum heat release rate of 100 KW when tested in accordance with Underwriters Laboratories (UL) 1975, Standard for Fire Tests for Foamed Plastics Used for Decorative Purposes.

**6-5. Coat Racks.** Clothing and personal effects will not be stored in corridors and lobbies.

**6-6. Cooking Equipment.** The manager of the assembly occupancy is responsible for frequent cleaning of exterior and exposed surfaces of kitchen hoods, ducts, filters and exhaust fans to prevent excessive accumulation of grease or other residue on any part of such equipment. Cooking will not be permitted when filters are not in place or are positioned in such a way as to create an opening that would permit grease or vapors to enter hood without passing through filters.

**6-7. Occupancy Limits.** All exits and access to exits shall be maintained in a useable and accessible condition at all times the building is occupied. Blocking or locking of exits during periods of use shall be cause for immediate closing of the place of assembly.

a. When a large crowd is anticipated or when requested by the Fire Chief, a plan indicating the seating arrangements, location and width of exit ways and aisles shall be submitted to the Fire and Emergency Services Division for approval. An approved copy shall be kept on display on the premises.

b. Managers and attendants shall be responsible for assuring that posted occupancy limits are not exceeded.

**6-8. Tents and Air Supported Structures.**

a. Approval from the Fire and Emergency Services Division will be obtained for all tents or air supported structures used for public assembly or exhibition or for any purpose when covering an area in excess of 200 square feet.

b. Egress shall be provided for all tents and air supported structures in accordance with nationally recognized codes and standards referenced herein and as approved by the Chief, Fire and Emergency Services Division.

c. Vehicles and internal combustion engines shall not be parked or placed within 20 feet of any tent or air supported structure.

d. Tents or air supported structures and their appurtenances shall be adequately roped, braced and anchored to withstand the elements of weather against collapsing.

e. The sidewall, drops and top of all tents and air-supported structures shall be of flame retardant material. All dividers, decorations, furnishing and floor coverings shall be treated in a manner to make them flame retardant.

f. Smoking and open flames shall be prohibited in all tents and air supported structures.

g. Fire extinguishers shall be provided in such types and quantities as required.

h. All heating or cooking equipment shall be approved for use by the Chief, Fire and Emergency Services Division.

i. Flammable or combustible liquids shall not be stored in any tent or air supported structure used for human occupancy including office, show, break area, etc.

j. All weeds or other combustible vegetation shall be removed from the area adjacent to any tent or air supported structure within a distance of 35 feet.



## **Chapter 7**

### **Dormitories**

**7-1. Fire Exit Drills.** Fire exit drills shall be coordinated with the fire department.

a. In the conduct of drills, emphasis shall be placed upon orderly evacuation under proper discipline rather than upon speed.

b. Drills shall include suitable procedures to ensure that all persons in the building or all persons subject to the drill actually participate.

c. Drills shall be held at unexpected times at least annually and under varying conditions to simulate the unusual conditions that occur in the case of fire.

**7-2. Furnishings and Decorations.** New draperies, curtains, and other similar loosely hanging furnishings and decorations in dormitories shall be flame resistant. These materials, required to be tested in accordance with NFPA 701, Standard Methods of Fire Tests for Flame Propagation Textiles and Films, shall comply with both small and large-scale tests.

**7-3. Un-vented Heaters.** Un-vented fuel-fired heaters shall not be used in dormitories.

**7-4. Means of Egress.** No door in any means of egress shall be locked against egress when the building is occupied and no dead-end corridor shall exceed 50 feet.

**7-5. Emergency Lighting.** Emergency lighting shall be provided, tested and maintained in accordance with paragraph 1-9 of this regulation.

**7-6. Cooking Equipment.** Cooking equipment will not be left unattended when in operation. The range shall be cleaned of accumulations of grease under the burners, oven area and hood after each use.

**7-7. Other Household Appliances.**

a. Clothes dryers, associated vents and filters will be kept free of lint at all times.

b. The use of electrical multi-plugs is prohibited. Cords will not be run under carpets, rugs, doors, over nails or through walls or ceilings. All extension cords shall be UL listed.

## Chapter 8

### Administrative Occupancies

**8-1. Drills.** In any building subject to occupancy by more than 500 persons or more than 100 persons above or below the street level, employees and supervisory personnel shall be instructed in exit drill procedures and shall hold practice drills semi-annually.

**8-2. Fire Extinguishers.** Employees of administration occupancies shall be instructed in the proper use of portable fire extinguishers.

**8-3. Means of Egress.** The minimum width of any corridor or passageway for exiting shall be 44 inches in the clear. Aisles leading to exit passageways or corridors shall be at least 36 inches in the clear.

a. No dead-end corridor shall exceed 50 feet.

b. Travel distance to exits shall not exceed 200 feet. An exception to this would be: Travel distance shall not exceed 300 feet in buildings protected throughout by an approved, automatic sprinkler system.

**8-4. Emergency Lighting.** Emergency lighting shall be provided, tested and maintained in accordance with paragraph 1-9 of this regulation.

## **Chapter 9**

### **Fuel Service Stations**

**9-1. Service Stations.** This section applies to new and existing fuel service stations.

**9-2. Special Definitions.**

a. Aboveground Storage Tank. A horizontal or vertical tank that is approved or listed and is intended for fixed installation without back fill, either above or below grade, and is used within the scope of its approval or listing.

b. Automotive Service Station. That portion of a property where liquids used as motor fuels are stored and dispensed from fixed equipment into the fuel tanks of motor vehicles or approved containers. This occupancy designation shall also apply to buildings, or portions of buildings, used for lubrication, inspection and minor automotive maintenance work such as tune-ups and brake repairs. Major automotive repairs, painting and body and fender work are excluded.

c. Closed Container. A container as herein defined, so sealed by means of a lid or other device that neither liquid nor vapor will escape from it at ordinary temperatures.

**9-3. Storage Requirements.**

a. Liquids shall be stored in approved closed containers not exceeding 60 gallon capacity; or tanks in special enclosures inside buildings; aboveground storage tanks may be installed at automobile service stations upon the approval of the fire department; or tanks located underground as in Section 2-4 of NFPA 30, Flammable and Combustible Liquids Code.

b. Accurate daily inventory records shall be maintained and reconciled on all Class I liquid and diesel fuel storage tanks for indication of possible leakage from tanks or piping. The records shall be kept at the premises or made available for inspection by the fire department within 24 hours of a written or verbal request. The records shall include, as a minimum, records showing by product, daily reconciliation between sales, use, receipts, and inventory on hand. If there is more than one system consisting of a tank(s) serving separate pump(s) or dispenser(s) for any product, the reconciliation shall be maintained separately for each tank system.

c. Special Enclosures. Enclosure shall be substantially liquid and vapor tight without back fill. Sides, top and bottom of the enclosure shall be of reinforced concrete at least 6 inches thick, with openings for inspection through the top only. Tank connections shall be so piped or closed that neither vapors nor liquid can escape into the enclosed space. Means shall be provided to use portable equipment to discharge to the outside any liquid or vapors that might accumulate should leakage occur.

**9-4. Spill Control.** Spill control shall be provided in accordance with the provisions of NFPA 30, Flammable and Combustible Liquids Code.

**9-5. Piping and Ancillary Equipment.**

a. Means shall be provided for determining the liquid level in each tank, and this means shall be accessible to the delivery operator. Provisions shall be made either to automatically stop the delivery of

liquid to the tank when the liquid level in the tank reaches 98 percent of capacity or to sound an audible alarm when the liquid level in the tank reaches 95 percent of capacity.

b. Liquid shall not be dispensed from the tank by gravity flow or by pressurization of the tank. Means shall be provided to prevent the release of liquid by siphon flow.

c. Shutoff and check valves shall be equipped with a pressure-relieving device that will relieve the pressure generated by thermal expansion back to the tank.

d. Piping shall be routed so that exposure to physical damage is minimized.

**9-6. Tank Filling Operations.** Delivery operations shall comply with applicable requirements of NFPA 385, Standard for Tank Vehicles for Flammable and Combustible Liquids.

a. The delivery vehicle shall be separated from any aboveground tank by at least 25 feet.

b. Tank filling shall not begin until the delivery operator has determined tank ullage (available capacity).

c. A check valve and a shutoff valve with a quick-connect coupling or a dry-break valve shall be installed in the piping at a point where connection and disconnection is made for delivery from the vehicle to any aboveground tank. This device shall be protected from tampering and physical damage.

d. If the delivery hose is connected directly to the tank, the fill line at the tank shall be equipped with a tight-fill device for connecting the hose to the tank to prevent or contain any spill at the fill opening during delivery operations. Exception: A tank that has a capacity that does not exceed 1,000 gallons need not meet this requirement.

**9-7. Fuel Dispensing System.** A clearly identified and easily accessible switch(s) or circuit breaker(s) shall be provided at a location remote from dispensing devices, including remote pumping systems, to shut off the power to all dispensing devices in the event of an emergency.

**9-8. Fuel Dispensing Devices.** Classes I and II liquids shall be transferred from tanks by means of fixed pumps designed and equipped to allow control of the flow and prevent leakage or accidental discharge.

a. Dispensing devices for Class I liquids shall be listed. Existing listed or labeled dispensing devices may be modified if the modifications made are "Listed by Report" by an approved testing laboratory or as otherwise approved by the fire department. Modification proposals shall contain a description of the component parts used in the modification and the recommended methods of installation on specific dispensing devices, and they shall be made available to the Protective Services Division upon request.

b. A control shall be provided that will permit the pump to operate only when a dispensing nozzle is removed from its bracket or normal position with respect to the dispensing device and the switch on this dispensing device is manually actuated. This control shall also stop the pump when all nozzles have been returned, either to their brackets or to the normal non-dispensing position.

c. Liquids shall not be dispensed by applying pressure to drums, barrels and similar containers. Listed pumps taking suction through the top of the container or listed self-closing faucets shall be used.

d. Dispensing devices, except those attached to containers, shall either be mounted on a concrete island or otherwise protected against collision damage by suitable means and shall be securely bolted in place.

e. Hose length at service stations shall not exceed 18 feet unless approved by the authority having jurisdiction. All hose shall be listed. When not in use, hose shall be so secured as to protect it from damage.

f. A listed emergency breakaway device designed to retain liquid on both sides of the breakaway point shall be installed on each hose dispensing Class I liquids. Such devices shall be installed and maintained in accordance with the manufacturer's instructions.

g. When maintenance to Class I dispensing devices becomes necessary and such maintenance may allow the accidental release or ignition of liquid, the following precautions shall be taken before such maintenance is begun:

(1) Only persons knowledgeable in performing the required maintenance shall perform the work.

(2) All electrical power to the dispensing device and pump serving the dispenser shall be shut off at the main electrical disconnect panel.

(3) The emergency shutoff valve at the dispenser, if installed, shall be closed.

(4) All vehicle traffic and unauthorized persons shall be prevented from coming within 20 feet of the dispensing device.

**9-9. Remote Pumping Systems.** This section shall apply to systems for dispensing Classes I and II liquids where such liquids are transferred from storage to individual or multiple dispensing devices by pumps located other than at the dispensing devices.

a. Pumps shall be listed and designed or equipped so that no part of the system will be subjected to pressures above its allowable working pressure.

b. Each pump shall have installed on the discharge side a listed leak detection device that will provide an indication if the piping and dispensers are not essentially liquid-tight. Each leak-detecting device shall be checked and tested at least annually according to the manufacturer's specifications to ensure proper installation and operation.

**9-10. Operational Requirements.** Fuel delivery nozzles shall be a listed automatic-closing hose nozzle valve and be provided on island-type dispensers used for the dispensing of Class I liquids.

**9-11. Dispensing into Portable Containers.** No delivery of any Class I or II liquid shall be made into portable containers unless the container is constructed of metal or is approved by the fire department, has a tight closure, and is fitted with a spout or so designed that the contents can be poured without spilling. Class I, II or III liquids shall not be dispensed into containers unless such containers are clearly marked with the name of the product contained therein.

**9-12. Attendance or Supervision of Dispensing.**

a. Each service station shall have an attendant or supervisor on duty whenever the station is open for business, which shall dispense liquids into fuel tanks or into containers.

b. Listed self-service dispensing devices are permitted at service stations if all dispensing of Class I liquids by a person other than the service station attendant is under the supervision and control of a qualified attendant, exception: See section, Unattended Self-Service Stations.

**9-13. Refueling of Material Handling Equipment and Vehicles.**

a. No equipment or vehicles will be refueled inside buildings. Refueling will be done 20 feet from buildings and loading docks and 90 feet from explosives and ammunition handling facilities.

b. Quantities may be dispensed from mobile units (containing not more than 600 gallons per compartment) at a minimum distance of 90 feet from explosives and ammunition handling facilities.

c. A minimum distance of 25 feet will be maintained between equipment and vehicle being serviced.

d. Equipment or vehicles waiting to be serviced will not be within 25 feet of equipment being refueled.

e. Bonding wire from tank vehicle will be attached to equipment before starting refueling procedures.

f. Smoking or open flame devices will not be permitted within 50 feet of the refueling operation.

g. Motor of equipment will be stopped and driver dismounted before refueling begins.

h. In event of a gasoline spill during refueling, the motors of the refueling truck and material handling equipment will not be started until the area is thoroughly cleaned or until the equipment is first moved by hand at least 50 feet from where the spill occurred.

i. Each tank vehicle will be provided with at least one portable fire extinguisher having a minimum 20-BC rating. Ratings will be in accordance with NFPA 10, Portable Fire Extinguishers.

**9-14. Attended Self-Service Stations.** Self-service station shall mean that portion of property where liquids used as motor fuels are stored and subsequently dispensed from fixed approved dispensing equipment into the fuel tanks of motor vehicles by persons other than the service station attendant.

a. Listed dispensing devices such as, but not limited to coin-operated, card-operated, and remote controlled types are permitted at self-service stations.

b. All attended self-service stations shall have at least one attendant on duty while the station is open for business. The attendant's primary function shall be to supervise, observe and control the dispensing of Class I liquids while said liquids are actually being dispensed.

- c. It shall be the responsibility of the attendant to:
  - (1) Prevent the dispensing of Class I liquids into portable containers not in compliance.
  - (2) Prevent the use of hose nozzle valve latch-open devices that do not comply.
  - (3) Control sources of ignition.
  - (4) Immediately activate emergency controls and handle accidental spills and fire extinguishers if needed.
- d. The attendant or supervisor on duty shall be mentally and physically capable of performing the functions and assuming the responsibility prescribed.
- e. Emergency controls shall be installed at a location acceptable to the authority having jurisdiction, but controls shall not be more than 100 feet from dispensers.
- f. Operating instructions shall be conspicuously posted in the dispensing area.
- g. The dispensing area shall at all times be in clear view of the attendant, and the placing or allowing of any obstacle to come between the dispensing area and the attendant control area shall be prohibited. The attendant shall at all times be able to communicate with persons in the dispensing area.

#### **9-15. Unattended Self-Service Stations.**

- a. Emergency controls specified in paragraph 10-13e shall be installed, but the controls shall be more than 20 feet but less than 100 feet from the dispensers. Additional emergency controls shall be installed on each group of dispensers. Emergency controls shall shut off power to all dispensing devices at the station. Controls shall be manually reset only in a manner approved by the fire department.
- b. In addition to those warning signs, emergency instructions shall be conspicuously posted in the dispenser area incorporating the following or equivalent wording:

##### **In Case of Emergency:**

##### **(1) Use emergency stop button.**

##### **(2) Report emergency via 911 or radio.**

- c. A listed, automatic-closing hose nozzle valve with latch-open device shall be provided. The system shall include listed equipment with a feature that causes or requires the closing of the hose nozzle valve before the product flow can be resumed or before the hose nozzle valve can be replaced in its normal position in the dispenser.
- d. A telephone or other approved, clearly identified means to notify the fire department shall be provided on the site.

**9-16. Sources of Ignition.** In addition to the restrictions contained in Chapter 9 of NFPA Standard 30A, Code for Motor Fuel Dispensing Facilities and Repair Garages, there shall be no smoking or open flames in the areas used for fueling, servicing fuel systems for internal combustion engines, or receiving or

dispensing of Class I liquids. Conspicuous and legible signs prohibiting smoking shall be posted within sight of the customer being served. The motors of all equipment being fueled shall be shut off during the fueling operation except for emergency generators, pumps, etc., where continuing operation is essential.

**9-17. Fire Control.** Each service station shall be provided with at least one listed fire extinguisher having a minimum classification of 40:BC located so that an extinguisher will be within 100 feet of each pump, dispenser and underground fill pipe opening.

**9-18. Signs.** Warning signs shall be conspicuously posted in the dispensing area incorporating the following or equivalent wording:

- a. **WARNING** - It is unlawful and dangerous to dispense gasoline into unapproved containers.
- b. **No Smoking.**
- c. **Stop Motor.**



## Chapter 10

### Repair Garages

**10-1. General.** This chapter covers the construction and protection of, as well as the control of hazards in, garages used for major repair and maintenance of motorized vehicles and any sales and servicing facilities associated therewith. Personnel shall be instructed in fire drill procedures and shall hold practice drills semi-annually.

**10-2. Construction.** A repair garage shall not be located within or attached to a building or structure used for any purpose other than a repair garage unless separated by walls or partitions, floors, or floor-ceiling assemblies having a fire resistance rating of not less than 2 hours.

**10-3. Floors.** In areas of repair garages used for repair or servicing of vehicles, floor assemblies shall be constructed of noncombustible materials or, if combustible materials are used in the assembly, shall be surfaced with approved noncombustible material. Floors shall be liquid tight to prevent the leakage or seepage of liquids and shall be sloped to facilitate the movement of water, fuel, or other liquids to floor drain.

a. In areas of repair garages where motor fuels are dispensed or where vehicles are serviced, if floor drains are provided, they shall be properly trapped and shall discharge through an oil separator to the sewer or to an outside vented sump.

b. The contents of oil separators and traps of floor drainage systems shall be collected at sufficiently frequent intervals to prevent oil from being carried into the sewers.

**10-4. Pits and Sub-Floor Work Areas.** Pits and sub-floor work areas shall comply with the following:

a. Walls, floors and piers shall be constructed of masonry, concrete or other suitable noncombustible material.

b. Pits shall have a minimum of two unobstructed means of egress to prevent trapping of personnel in the event of fire. Steps shall be noncombustible, slip resistant and constructed with no accessible storage space beneath. Improvised furnaces, salamanders or space heaters shall not be permitted. Heating equipment shall be installed to conform to NFPA standards.

c. Combined ventilation and heating systems shall not recirculate air from areas below grade level. Below grade areas occupied for repairing, or communicating areas located below a repair garage, shall be continuously ventilated by a mechanical ventilating system of not less than 1 cfm/sq ft of floor area. An approved means shall be provided for introducing an equal amount of outdoor air. Exhaust duct openings for required ventilation shall be so located as to effectively remove vapor accumulations at floor level from all parts of the repair area.

**10-5. Repair Areas.**

a. Cleaning of parts shall be performed with a nonflammable solvent.

b. A device for heating solvents that give off flammable or toxic vapors when heated shall be provided with a limit control to prevent the solvent from exceeding a temperature 50 degree Fahrenheit below the point at which flammable or toxic vapors are released.

c. Floors shall be kept clean and free of oil and grease. Only approved water solutions or detergents, floor sweeping compounds, and grease absorbents shall be used for cleaning floors.

d. Approved metal receptacles with self-closing covers shall be provided for the storage or disposal of oil-soaked waste or cloths.

e. Combustible rubbish shall be placed in covered metal receptacles until removed to a safe place for disposal. Contents of such containers shall be removed daily.

**10-6. Fire Protection.** Approved fire extinguishers shall be provided. Employees of all repair garages shall be instructed with respect to the importance of transmitting fire alarms promptly and shall be trained in the use of available fire extinguishers.

## Chapter 11

### Warehouses and Storage Occupancies

**11-1. General.** New and existing storage occupancies shall comply with the referenced edition of NFPA Standard 101, Code for Safety to Life from Fire in Buildings and Structures.

**11-2. Special Provisions.** The storage of combustibles up to 30 feet; or the storage of plastics (Groups B and C - all configurations; Group A - free-flowing only) up to 30 feet in height; or storage of Group A plastics (except free-flowing) up to 25 feet in height shall comply with this chapter and NFPA Standard 230, Standard for General Storage.

**11-3. Combustibles Over 12 Feet in Height.** The storage of combustibles stored over 12 feet in height on racks shall be in accordance with NFPA Standard 230C, Standard for Rack Storage of Materials.

**11-4. Tire Storage.** Storage of tires shall comply with NFPA Standard 230, Chapter 8, Protection of Rubber Tires.

**11-5. Cold Weather Procedures.** To minimize unnecessary damage to Government equipment and property procedures for extreme cold weather storage is as follows:

a. Extreme cold weather is defined as temperatures below 0 degrees Fahrenheit or wind chill of -30 degrees Fahrenheit.

b. Upon notification of extreme cold weather the movement of non-tactical vehicles and material handling equipment into approved indoor parking areas overnight is permitted. The area of storage shall be coordinated with the fire department to ensure adequate measures of protection are in place.

**11-6. Means of Egress.** Arrangement of means of egress shall be in accordance with the Life Safety Code and determined in accordance to the hazard content of the storage commodities.

**11-7. Emergency Lighting.** Emergency lighting shall be provided, tested and maintained in accordance with paragraph 1-9 of this regulation.

**11-8. Combustible Packing Material.**

a. Receiving, packing and unpacking boxed or crated material will be confined to the area designated for that purpose. Open boxes with shredded paper, excelsior or other high combustible packing material will not be permitted beyond these areas.

b. Metal containers with metal covers will be used for collection of all combustible packing material. During unpacking operations, combustible packing material removed from each box will be properly placed in containers. In no case will an excessive amount of such material be allowed to accumulate on floors. Discarded combustible waste material, scrap lumber, empty cartons, soiled rags and metal containers filled with packing material will not be left in the building overnight.

c. Material will not be stacked higher than the horizontal level of the lower roof trusses.

d. A clearance of 18 inches will be maintained from radiators, heating pipes and lighting fixtures.

e. A clearance of 18 inches below the horizontal level of each automatic sprinkler head will be maintained, except that a clearance of 36 inches will be maintained where stacks exceed 15 feet in height or where hazardous commodities are involved.

f. A clearance of 24 inches will be maintained between stored combustible containers, and substandard interior firewalls. Maintaining a clearance between stored supplies and standard firewalls is not required unless material is subject to expansion when wet.

g. A clearance of 36 inches will be maintained between all stored supplies and electrical panels, gas regulators, and shutoff valves, fire alarm controls and sprinkler valves.

h. Fire doors will be closed when personnel do not occupy warehouses. Fire doors will never be blocked. Material will not be stored within 36 inches of fire door openings.

i. All material handling equipment, such as forklift trucks and stacking equipment will be of an approved type operated by trained personnel and maintained in a safe manner. Gasoline engine driven equipment will be refueled outside of the storage buildings and will be stored and serviced in separate areas designated for this purpose.

j. A fire prevention inspection will be made by a responsible person just prior to the closing for the day of each warehouse, storage building and supply section in which there is activity during that day.

## Chapter 12

### Hazardous Materials and Chemicals

**12-1. General Provisions.** The purpose of this chapter is to provide requirements for the prevention, control and mitigation of dangerous conditions related to the storage of hazardous materials and chemicals.

**12-2. Special Definitions.**

a. **Atmospheric Tank.** A storage tank that has been designed to operate at pressures from atmospheric through 0.5 psig measured at the top of the tank.

b. **Combustible Liquid.** A liquid having a flash point at or above 100 degrees Fahrenheit. Combustible liquids shall be subdivided as follows:

(1) Class II liquids shall include those having flash points at or above 100 degrees Fahrenheit.

(2) Class IIIA liquids shall include those having flash points at or above 140 degrees Fahrenheit and below 200 degrees Fahrenheit.

(3) Class IIIB liquids shall include those having flash points at or above 200 degrees Fahrenheit.

c. **Compatible Material.** A material that, when in contact with an oxidizer, will not react with the oxidizer, promote or initiate its decomposition.

d. **Container.** Any vessel of 60 gallons or less capacity used for transporting or storing liquids.

e. **Explosion.** The bursting or rupture of an enclosure or a container due to the development of internal pressure from a deflagration.

f. **Fire Area.** An area of building separated from the remainder of the building by construction having a fire resistance of at least 1 hour and having all communicating openings properly protected by an assembly having a fire resistance rating of at least 1 hour.

g. **Flammable Liquid.** A liquid having a flash point below 100 degrees Fahrenheit and having a vapor pressure not exceeding 40 pounds per square inch or 100 degrees Fahrenheit shall be known as a Class I liquid. Class I liquids shall be subdivided as follows:

(1) Class IA shall include those having flash points below 73 degree Fahrenheit and having a boiling point below 100 degree Fahrenheit.

(2) Class IB shall include those having flash points below 73 degree Fahrenheit and having a boiling point at or above 100 degree Fahrenheit.

(3) Class IC shall include those having flash points at or above 73 degrees Fahrenheit and below 100 degrees Fahrenheit.

h. Flash Point. The minimum temperature at which a liquid gives off vapor in sufficient concentration to form an ignitable mixture with air near the surface of the liquid within the vessel as specified by appropriate test procedure and apparatus.

i. Incompatible Material. A material that, when in contact with an oxidizer, can cause hazardous reactions or can promote or initiate decomposition of the oxidizer.

j. Material Safety Data Sheet (MSDS). A written or printed material concerning a hazardous material that is prepared in accordance with the provisions of 29 CFR 1910. 1200.

k. Oxidizer. Any material that readily yields oxygen or other oxidizing gas, or that readily reacts to promote or initiate combustion of combustible materials. Examples of other oxidizing gases include bromine, chlorine and fluorine.

l. Portable Tank. Any closed vessel having a liquid capacity over 60 U.S. gallons and not intended for fixed installation.

m. Safety Can. Approved containers, of not more than 5-gallon capacity, having a spring-closing lid, spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure.

n. Unstable (Reactive). A chemical that in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense or become self-reactive under conditions of shock, pressure or temperature.

**12-3. Liquid and Solid Oxidizers.** Indoor storage of liquid and oxidizers shall be in accordance with NFPA Standard 430, Code for the Storage of Liquid and Solid Oxidizers.

**12-4. General Storage Arrangements for Oxidizers.** The arrangement and quantity of oxidizers in storage shall depend upon their classification, type of container, type of storage (segregated, cutoff, or detached) and fire protection as specified in the manufacturer or processor's instructions.

a. Oxidizers shall be stored to avoid contact with incompatible materials such as ordinary combustibles, combustible or flammable liquids, greases and those materials that could react with the oxidizer, promote, or initiate this decomposition. This shall not include approved packaging materials, pallets or other dunnage. Exception: Hydrogen peroxide (Classes 2 through 4) stored in drums shall not be stored on wooden pallets).

b. Special care shall be taken to prevent any contamination of oxidizers in storage.

c. Shelves and vertical barriers shall be placed between incompatible materials and shall be solid and of noncombustible construction.

d. Solid oxidizers shall not be stored directly beneath incompatible liquids.

e. Shelves shall be limited to 24 inches deep.

f. Storage shall be no greater than 6 feet high.

g. The total amount of oxidizers in all classes shall be limited to 2 tons in nonsprinklered areas and 4 tons in sprinklered areas. Sprinklers shall be designed for the most severe class of oxidizer present. Exception: These amounts shall be independent maximums for each class without regard for proportional amounts.

h. Where two or more different classes of oxidizers are stored in the same area, the maximum quantity permitted shall be limited to the sum of the proportional amounts that each class bears to the maximum permitted for that class. The total of the proportional amounts shall not exceed 100 percent.

## **12-5. Organic Peroxide Formulations**

a. Indoor Storage. Indoor storage of organic peroxide formulations shall be in accordance with the provisions of this section and NFPA Standard 432, Code for the Storage of Organic Peroxide Formulations.

(1) All storage areas containing organic peroxide formulations shall be conspicuously identified by the words "Organic Peroxides" and by the class.

(2) When organic peroxide formulations having different classifications are stored in the same area, the area shall be marked for the most severe class present.

(3) Packages containing organic peroxide formulations shall be individually marked with the chemical name of the organic peroxide or with other information suitable and adequate to allow proper area classification as required.

(4) Packages containing organic peroxide formulations that require temperature control shall be marked with the recommended storage temperature range.

(5) When two or more different classes of organic peroxide formulations are stored in the same area, the maximum quantity permitted shall be limited to the sum of the proportional amounts that each class bears to the maximum permitted for that class. The total of the proportional amounts shall not exceed 100 percent.

b. Storage Requirement.

(1) A minimum 8-foot clear space shall be maintained between organic peroxide storage and any other storage.

(2) Flammable liquids or incompatible materials shall not be stored within 25 feet of the organic peroxide storage area unless separated by a fire barrier having a fire resistance rating of at least 1 hour and sealed or curbed were necessary.

(3) A clear space of at least 4 feet shall be maintained between organic peroxide storage and any walls of combustible or limited-combustible construction.

**12-6. Flammable and Combustible Liquids.** All flammable and combustible liquids covered by this chapter shall comply with the requirements of this chapter and NFPA Standard 30, Flammable and Combustible Liquids Code. This chapter applies to all flammable and combustible liquids, including waste liquids, except those that are solid at 100 degrees Fahrenheit or above.

- a. Benches, floors and equipment will be cleaned of noticeable accumulations of oil, grease or paint. All spills of fluids will be cleaned up immediately.
- b. Safety cans of flammable liquids having a flash point at or below 80 degrees Fahrenheit will be painted red with a yellow band around the can and the name of the contents conspicuously stenciled or painted on the can in yellow.
- c. Safety cans of flammable liquids having a flash point above 80 degrees Fahrenheit will be painted yellow and the name of the contents stenciled conspicuously on the can in black.
- d. Oily and greasy rags and waste including paper wiping material will be kept in separate, approved lid-covered metal containers that are labeled as to contents. Clean rag containers will be of metal with tight-fitting covers. No rags will be stored in closets unless stored in an approved metal container.
- e. Coveralls, overalls, and other clothing which contain excessive grease and oil, such as to constitute a fire hazard, will be placed in a metal container (labeled) with tight-fitting lid or removed from the work area as soon as practical.
- f. Aerosol spray and pressurized cans shall be classified as a flammable liquid and will be properly punctured before disposal into metal receptacles with a tightly sealed lid. The container shall be label as to contents.
- g. Quantities in use by any maintenance, processing, or similar operation will not exceed daily requirements. Quantities shall be stored in approved cabinets at the end of the workday or shift. Liquids will be tightly sealed upon removal from work areas and stored only in locations provided for each purpose.
- h. Not more than 120 gallons of Classes I, II and III liquids may be stored in a storage cabinet. Of this total, not more than 60 gallons may be of Class I and Class II liquids, and not more than three (3) cabinets, if separated from other cabinets or group of cabinets by a least 100 feet.
- i. Cabinets shall be marked in conspicuous lettering "FLAMMABLE - KEEP FIRE AWAY." The cabinet is not required to be vented for fire protection purposes; however, the following shall apply:
  - (1) If the cabinet is vented for whatever reasons, the cabinet shall be vented outdoors in such a manner that will not compromise the specified performance of the cabinet, as acceptable to the authority having jurisdiction.
  - (2) If the cabinet is not vented, the vent openings shall be sealed with the bungs supplied with the cabinet or with bungs specified by the manufacturer of the cabinet.
- j. The storage of any liquids shall not physically obstruct a means of egress or preclude egress from the area, if a fire occurred in the flammable liquid storage area.
- k. All bulk dispensing containers for flammable and combustible liquids will be provided with bonding straps and grounding. Drums used for dispensing will be equipped with approved type self-closing faucets with a flame arrestor screen.



l. Maintenance and processes utilizing flammable liquids cleaning tanks shall be equipped with adequate mechanical ventilation to confine and remove flammable vapors. These tanks shall be equipped with covers arranged to close automatically (fusible links) in the event of fire and be capable of manually closing the lid.

m. Spills shall be immediately reported and the depot spill contingency plan followed.

**12-7. Container and Portable Tank Storage.** This section shall apply to the storage of liquids in drums or other containers not exceeding 60-gallon individual capacity and portable tanks not exceeding 660-gallon individual capacity and limited transfers incidental thereto. For the purpose of this chapter, unstable liquids shall be treated as Class IA liquids.

**12-8. Design, Construction and Capacity of Containers.**

a. Only approved containers and portable tanks shall be used.

b. Each portable tank shall be provided with one or more devices installed in the top with sufficient emergency venting capacity to limit internal pressure under fire exposure conditions to 10 psi, or 30 percent of the bursting pressure of the tank, whichever is greater.

c. Classes IA and Class IB liquids may be stored in glass containers of not more than one gallon capacity if the required liquid purity (such as analytical reagent grade or higher) would be affected by storage in metal containers or if the liquid would cause excessive corrosion of the metal container.

**12-9. Fire Control.**

a. Suitable fire extinguishers or preconnected hose lines, either 1 1/2 inch lined or 1-inch hard rubber, shall be provided where liquids are stored. Where 1 1/2 inch fire hose is used, it shall be installed in accordance with NFPA 14, Standard for the Installation of Standpipe and Hose Systems.

b. At least one portable fire extinguisher having a rating of not less than 20-B shall be located outside of, but not more than 10 feet from, the door opening into any separate inside storage area.

c. At least one portable fire extinguisher having a rating of not less than 20-B shall be located not less than 10 feet, nor more than 50 feet, from any Class I or Class II liquid storage area located outside of a separate inside storage area.

d. In protected general purpose and liquid warehouses, hand hose lines shall be provided in sufficient number to reach all liquid storage areas.

e. The water supply shall be sufficient to meet the fixed fire protection demand, plus a total of at least 500 gallons per minute for inside and outside hose lines.

f. Dispensing of Classes I and II liquids in general purpose or liquid warehouses shall not be permitted unless the dispensing area is suitably cut off from other ordinary combustible or liquid storage areas.

g. Materials with a water reactivity degree of 2 or higher as outlined in NFPA 704, Standard

System for the Identification of the Hazards of Materials for Emergency Response, shall not be stored in the same area with other liquids.

h. Power-operated industrial trucks used to move containers of Class I liquids shall be selected, maintained, and operated in accordance with NFPA 505, Fire Safety Standard for Powered Industrial Trucks Including Type Designations, Areas of Use, Conversions, Maintenance, and Operation

**12-10. Outdoor Storage.** Outdoor storage of liquids in containers and portable tanks shall be in accordance with Table 4.7.1 of NFPA 30, Flammable and Combustible Liquids Code, and the following paragraphs of this regulation.

a. Where two or more classes of materials are stored in a single pile, the maximum gallonage in that pile shall be in the smallest of the two or more separate gallonages.

b. No container or portable tank in a pile shall be more than 200 feet from a 12-foot wide access way to permit approach of fire control apparatus under all weather conditions.

c. The maximum of 1,100 gallons of liquids in closed containers and portable tanks may be stored adjacent to a building located on the same premises and under the same management provided that:

(1) The adjacent building wall has an exterior fire resistance rating of 2 hours.

(2) There are no openings to areas at grade or above grade that are within 10 feet horizontally of the storage.

(3) There are no openings directly above the storage.

(4) There are no openings to areas below grade within 50 feet horizontally of the storage.

Exception: The above provisions are not necessary if the building in question is limited to one story, is of fire resistive or noncombustible construction, is devoted principally to the storage of liquids, and is acceptable to the fire department.

d. The storage areas shall be graded in a manner to divert possible spills away from buildings or other exposures or shall be surrounded by a curb at least 6 inches high. Where curbs are used, provisions shall be made for draining of accumulations of ground or rainwater or spills of liquids. Drains shall terminate at a safe location and shall be accessible to operation under fire conditions.

e. The storage area shall be protected against tampering or trespassers where necessary and shall be kept free of weeds, debris and other combustible materials not necessary to the storage.

**12-11. Hazardous Materials Storage Lockers Located Outside.** Lockers governed by this regulation shall not exceed 1,500 square feet gross floor area. Vertical stacking of lockers shall not be permitted.

a. Lockers shall include a spill containment system to prevent flow of liquids from the structure under emergency conditions. The containment system shall have sufficient capacity to contain 10 percent of the volume of containers allowed or the volume of the largest container whichever is greater.

b. Designated sites shall be provided for the location and use of lockers and shall be subject to the

approval of the authority having jurisdiction. The designated sites shall be arranged to provide at least the minimum separation distance between individual lockers, distance from locker to property line that is or can be built upon, and distance from locker to nearest side of public ways or to important buildings on the same property, as given in Table 4.6.4 of NFPA Standard 30..

c. Once the designated site is approved, it shall not be changed without the approval of the fire department.

d. More than one locker shall be as permitted at designated site, provided that separation distance between individual lockers is maintained in accordance with Table 4.6.4 of NFPA Standard 30..

e. Containers of liquids in their original shipping packages shall be stored either palletized or solid piled. Unpackaged containers shall be permitted to be stored on shelves or directly on the floor of the locker. Containers over 30-gallon capacity storing Classes I or II liquids shall not be stored more than two containers high. In all cases, the storage arrangement shall provide unrestricted access to and egress from the locker.

f. No other flammable or combustible material storage shall be permitted within the designated site approved for lockers.

**12-12. Operations.** This section applies to operations involving the use or handling of liquids either as a principal or incidental activity, except as covered elsewhere by this regulation or NFPA Standard 30 and other NFPA standards.

a. Control of Ignition Sources. Precautions shall be taken to prevent the ignition of flammable vapors. Sources of ignition include, but are not limited to:

- |                         |   |
|-------------------------|---|
| (1) Open flames         | (7) Spontaneous Ignition                    |
| (2) Lightning           | (8) Frictional heat/sparks                  |
| (3) Hot surfaces        | (9) Static electricity                      |
| (4) Radiant heat        | (10) Electrical sparks                      |
| (5) Smoking             | (11) Stray currents                         |
| (6) Cutting and welding | (12) Ovens, furnaces, and heating equipment |

b. All equipment such as tanks, machinery and piping where an ignitable mixture may be present shall be bonded or connected to a ground. The bond, ground or both shall be physically applied or shall be inherently present by the nature of the installation. Electrically isolated sections of metallic piping or equipment shall be bonded to the other portions of the system or individually grounded to prevent hazardous accumulations of static electricity.

### **12-13. Incidental Use of Liquids**

a. The quantity of liquid that may be located outside of storage cabinets, inside storage rooms, cutoff rooms and attached buildings, general purpose warehouses, liquid warehouses or other specific processing areas that are cut off by at least 2-hour fire rated separation from the general plant area shall not exceed the greater of the quantity in either (1) or the sum of (2), (3), (4), and (5) below:

- (1) A supply for one day, or

- (2) 25 gallons of Class IA liquids in containers
- (3) 120 gallons of Class IB, IC, II or III liquids in containers
- (4) Two portable tanks each not exceeding 660 gallons of Class IB, IC, Class II, or Class IIIA liquids; and
- (5) 20 portable tanks each not exceeding 660 gallons of Class IIIB liquids.

**12-14. Inspections and Maintenance.**

- a. Combustible waste material and residues in operating areas shall be kept to a minimum, stored in covered metal containers, and disposed of daily.
- b. Ground areas around facilities where liquids are stored, handled or used shall be kept free of weeds, trash or other unnecessary combustible materials.

**12-15. Emergency Planning and Training.** An emergency action plan, consistent with the available equipment and personnel, shall be established to respond to fire or other emergencies. This plan shall include the following:

- a. Procedures to be used in case of fire, such as sounding the alarm, notifying the fire department, evacuating personnel, and controlling and extinguishing the fire.
- b. Appointment and training of persons to carry out fire safety duties.
- c. Maintenance of fire protection equipment.
- d. Holding fire drills.
- e. Shutdown or isolation of equipment to reduce the escape of liquid.
- f. Alternate measures for the safety of occupants while any fire protection equipment is shutdown.

## Chapter 13

### Liquefied Petroleum Gases/Liquefied Natural Gases

**13-1. Application.** The storage and handling of liquefied petroleum gases shall be in accordance with this chapter and NFPA 58, Liquefied Petroleum Gas Code

a. Plans for fixed (stationary) installations of Liquefied Petroleum (LP) gas utilizing storage containers of over 2,000 gallons individual water capacity, or with aggregate water capacity exceeding 4,000 gallons, shall be submitted to the fire department before the installation is started.

b. Special Definitions.

(1) ASME. American Society of Mechanical Engineers.

(2) ASME Container (or Tank). A container constructed in accordance with the ASME Code.

(3) Cylinder. A portable container constructed to Department of Transportation (DOT) cylinder specifications or, in some cases, constructed in accordance with the ASME Code of a similar size and for similar service. The maximum size permitted under DOT specifications is 1,000 pounds water capacity.

(4) Vaporizer. A device other than a container that receives LP Gas in liquid form and adds sufficient heat to convert the liquid to a gaseous state.

(5) Vaporizer, Direct-Fired. A vaporizer in which heat furnished by a flame is directly applied to some form of heat-exchanged surface in contact with the liquid LP Gas to be vaporized. This classification includes submerged combustion vaporizers.

(6) Vaporizer, Indirect (also called Indirect-Fired). A vaporizer in which heat furnished by steam, hot water, the ground, surrounding air or other heating medium is applied to a vaporizing chamber or to tubing, pipe coils or other heat exchange surface containing the liquid LP Gas to be vaporized; the heating of the medium used being at a point remote from the vaporizer.

### 13-2. LP Gas Equipment and Appliances.

a. Containers showing serious denting, bulging, gouging, or excessive corrosion shall be removed from service.

b. Repair or alteration of containers shall comply with the regulations, rules or code under which the container was fabricated. Other welding is permitted only on saddle plates, lugs or brackets attached to the container by the container manufacturer.

c. Containers for general use shall not have individual water capacities greater than 120,000 gallons. Containers in service stations shall not have individual water capacities greater than 30,000 gallons.

d. Portable containers of 1,000 pounds water capacity or less shall incorporate protection against physical damage to container appurtenances and immediate connections to these while in transit, storage, while being moved into position for use, and when in use except in residential and commercial installations, by:

(1) Recessing connections into the container so that valves will not be struck if the container is dropped on a flat surface or,

(2) A ventilated cap or collar designed to permit adequate pressure relief valve discharge and capable of withstanding a blow from any direction equivalent to that of a 30 pounds weight dropped 4 feet. Construction shall be such that the force of the blow will not be transmitted to the valve. Collars shall be designed so that they do not interfere with the free operations of the cylinder valve.

(3) Portable containers of more than 1,000 pounds water capacity, including skid tanks or for use as cargo containers, shall incorporate protection against physical damage to container appurtenances by recessing, protective housings, or by location on the vehicle. Such protection shall comply with the provisions under which the tanks are fabricated, and shall be designed to withstand static loadings in any direction equal to twice the weight of the container and attachments when filled with LP Gas, using a safety factor of not less than four, based on the ultimate strength of the material to be used.

(4) Horizontal containers of 2,000 gallons water capacity or less, designed for permanent installation in stationary service, may be equipped with nonfireproofed structural steel supports and designed to permit mounting on firm foundations.

### **13-3. Piping (Including Hose), Fittings and Valves.**

a. Piping (including hose), fittings and valves shall comply with Section 5.8 of NFPA 58.

b. Emergency shutoff valves shall be approved and incorporate all of the following means of closing:

(1) Automatic shutoff through thermal (fire) actuation. When fusible elements are used, they shall have a melting point not exceeding 250 degrees F.

(2) Manual shutoff from a remote location.

(3) Manual shutoff at the installed location.

c. Hose, hose connections and flexible connectors shall be fabricated of materials resistant to the action of LP Gas both as liquid and vapor. If wire braid is used for reinforcement, it shall be of corrosion resistant material such as a stainless steel.

d. Hydrostatic relief valves designed to relieve the hydrostatic pressure that might develop in sections of liquid piping between closed shutoff valves shall have pressure settings not less than 400 psig or more than 500 psig unless installed in systems designed to operate above 350 psig. Hydrostatic relief valves for use in systems designed to operate above 350 psig shall have settings not less than 110 percent or more than 125 percent of the system design pressure.

e. Valves and piping will be labeled as to their control and being in the open or shut position. Warning signs and diagram of the piping and system layout shall be provided to the fire department for fire preplanning purposes.

## Chapter 14

### Portable Heating Devices

#### 14-1. General Requirements.

a. All heating devices will be Underwriters Laboratories (UL) listed. Any changes made to heating devices that have been UL listed will automatically void the listing, therefore rendering the heating device unapproved for use.

b. Ample space of at least 3 feet shall be provided between heat producing equipment and any combustible material.

**14-2. Electric Heaters.** Where allowed by this section portable heaters shall be designed and located so that they cannot be easily overturned. The fire department shall be permitted to prohibit use of portable heaters in occupancies or situations in which such use or operation would present an undue danger to life or property.

a. All portable electric heaters shall be equipped to de-energize electric power to the unit when tilted or turned over.

b. Portable electric heaters shall be listed by Underwriters Laboratories (UL) or equal testing laboratory and shall comply with the National Electric Code.

c. The portable electric heater shall have a thermostat for heat control.

d. Electrical extension cords shall not be used in connection with any portable heating device.

**14-3. Gas and Oil Burners.** Gas-fired heaters, appliances and oil burning equipment will be installed under the supervision of the Directorate of Public Works in conformance with NFPA Standards. All such equipment will be operated according to manufacturers' specifications and applicable regulations.

a. No gas appliance should be installed as to raise the temperature of nearby combustible material more than 90 degrees Fahrenheit above normal room temperature during the continuous operation of the gas-burning appliance. All gas appliances (except domestic gas ranges) with a demand in excess of 50,000 BTU per hour should be flue-connected.

b. Liquefied petroleum gas burning equipment will be installed only by licensed dealers under the supervision of the Directorate of Public Works. National fire codes and standards will be complied with at all such installations.

c. In the event of fire where liquefied petroleum gas systems are involved, every effort should be made to shut off fuel supplies and to insulate them from heating equipment.

## Chapter 15

### Spray Application Using Flammable and Combustible Materials

**15-1. Application.** Operations involving the spray application of flammable and combustible materials shall comply with this chapter and NFPA 33, Standard for Spray Application Using Flammable or Combustible Materials.

a. This chapter shall apply to locations or areas where flammable or combustible materials are applied by means of spray apparatus. This chapter outlines requirements to obtain reasonable safety when applying flammable and combustible finishes using spray application methods and devices.

b. This chapter does not cover the outdoor spray application to buildings, tanks or similar structures. With such occasional applications, over-spray deposits are not likely to create a hazardous condition and the space in which flammable vapor-air mixtures may be present is limited because of atmospheric dilution.

**15-2. Special Definitions.**

a. **Spray Area.** Any area in which dangerous quantities of flammable or combustible vapors, mists, residues, dusts, or deposits are present due to the operation of spray processes. A spray area shall include:

(1) The interior of spray booths and rooms except as specifically provided in Section 11-4 of NFPA 33.

(2) The interior of ducts exhausting from spraying processes.

(3) Any area in the direct path of spraying operations.

b. **Spray Booth.** A power-ventilated structure provided to enclose or accommodate a spraying operation, to confine and limit the escape of spray, vapor and residue, and to safely conduct or direct them to an exhaust system. Spray booths are manufactured in a variety of forms, including automotive refinishing, downdraft, open-face, traveling, tunnel and updraft booths.

c. **Spray Room.** A power-ventilated fully enclosed room used exclusively for open spraying of flammable or combustible materials. The entire spray room is a spray area. A spray booth is not a spray room.

**15-3. Spray Area.**

a. Walls and ceilings that enclose or intersect spray areas shall be substantially constructed of steel, concrete, masonry or other noncombustible materials and shall be securely and rigidly supported. The interior surfaces of spray areas shall be smooth and designed to prevent pocketing of residues and to facilitate ventilation, cleaning and washing. The floor of spray areas, if combustible, shall be covered by noncombustible material.

b. Where steel is used as a construction material for the purposes of this chapter, it shall not be less than No. 18 Manufacturers' Standard Grade.



- c. Aluminum or other noncombustible material may be used for intermittent or low volume spraying, subject to approval of the fire department.
- d. Spray rooms shall have at least a 1-hour fire resistance rating.
- e. Spray booths shall be separated from other operations by not less than 3 feet, or by a partition or wall having a one-hour fire resistance rating. Spray booths shall be installed so that all portions are readily accessible for cleaning. A clear space of not less than 3 feet on all sides shall be kept free from storage or combustible construction. This does not preclude the installation of a spray booth against a partition or wall having a one-hour rating providing the booth can be maintained and cleaned.
- f. Where spray areas are illuminated through glass panels or other noncombustible transparent materials, fixed lighting units shall be used as a source of illumination. Panels shall effectively isolate the spray area from the area in which the lighting unit is located and shall be of noncombustible materials of such a nature or so protected that breakage will be unlikely. Panels shall be so arranged that normal accumulations of residue on the exposed surface of the panel will not be raised to a dangerous temperature by the lighting unit. Panels shall be so installed that they may be easily cleaned.
- g. Panels for light fixtures or for observation shall be of heat-treated glass, wired glass, or hammered wired glass and shall be sealed to confine vapors, mists, residue, dusts, and deposits to the spray area. Panels for light fixtures shall be separated from the fixture to prevent the surface temperature of the panel from exceeding 200 degrees F.
- h. Spray areas equipped with distribution or baffle plates or dry-type over-spray collection filters shall conform to the following:
  - (1) Distribution or baffle plates shall be of noncombustible material and readily removable or accessible on both sides for cleaning.
  - (2) Supports and holders for filters shall be noncombustible.
  - (3) Clean filters shall be of a listed type.
  - (4) Filters shall not alternately be used for different types of coating materials, where the combination of materials may result in spontaneous ignition.
- i. Conveyor openings that are necessary for transporting or moving work into and out of the spray area shall be as small as practical and shall be cleaned on a regular basis to avoid buildup of paint residue.

#### **15-4. Sources of Ignition.**

a. There shall be no open flame, spark-producing equipment or exposed surfaces exceeding the ignition temperature of the material being sprayed in the areas specified in (a) and (b) below. Further, there shall be no equipment or processes that may produce sparks or particles of hot metal located above or adjacent to the areas in (1) and (2) below, unless means are provided to prevent the sparks or particles of hot metal from entering these areas:

- (1) A spray area is herein defined.

(2) An area adjacent to a spray area and defined in Section 4-7 of NFPA 33 as requiring electrical equipment conforming to the provisions of NFPA 70, National Electrical Code, for Division 2 locations, unless separated there from by a partition extending at least to the boundary of the Division 2 location.

b. Space heating appliances, steam pipes or hot surfaces shall not be located in a spray area where deposits or combustible residues may readily accumulate and be ignited.

c. Electrical wiring and equipment shall conform to the provisions of this section and shall otherwise be in accordance with NFPA 70.

d. Electrical motors driving exhaust fans shall not be placed inside any spray area unless they meet the provisions of NFPA 33.

e. Unless specifically listed for locations containing deposits of dangerous quantities of flammable or combustible vapors, mists, residues, dusts, or deposits, there shall be no electrical equipment in any spray area as herein defined whereon deposits of combustible residue may readily accumulate, except wiring in rigid metal conduit, Mineral Insulated (MI) cable, or in metal boxes or fittings containing no taps, splices, or terminal connections.

f. Portable electric lamps shall not be used in any spray area during spraying operations.

g. All metal parts of spray booths, exhaust ducts, and piping systems conveying flammable or combustible liquids or aerated combustible solids shall be properly electrically grounded in an effective and permanent manner.

h. Unless specifically intended to be operated at other than ground potential, airless high fluid pressure spray guns and any conductive object being sprayed shall be properly electrically grounded.

i. Powered vehicles shall not be moved into or out of a spray area or operated in a spray area unless the spray application operation or process is stopped and the ventilation system is maintained in operation. This requirement shall not apply to vehicles that are listed for the specific hazards of the spray area.

**15-5. Ventilation.** Ventilating and exhaust systems shall be in accordance with NFPA 91, Standard for Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Noncombustible Particulate Solids, where applicable, and shall conform to provisions of this section for Liquid Coating Systems:

a. All spray areas shall be provided with mechanical ventilation adequate to confine and remove flammable or combustible vapors or mists to a safe location, to maintain the concentration of flammable or combustible vapors or mists in the exhaust stream below 25 percent of the lower flammable limit (LFL), and to confine and control combustible residues, dusts, or deposits.

b. Spray areas equipped with over-spray collection filters shall have visible gauges, audible alarms or an effective inspection program that indicates that the required air velocity is maintained.

c. Mechanical ventilation shall be kept in operation at all times while spraying operations are being conducted and for a sufficient time thereafter to allow flammable vapors from drying coated articles and drying finishing material residue to be exhausted.

d. Individual spray booths shall be separately ducted to the building exterior, except for multiple

cabinet spray booths with combined frontal areas of not more than 18 square feet using coating materials not likely to react and cause ignition of the residue, or where permitted in NFPA Standard 33.

e. The exhaust duct discharge point shall be not less than 6 feet from any combustible exterior wall or roof nor shall the exhaust duct discharge in the direction of any combustible construction or unprotected opening in any noncombustible exterior wall within 25 feet.

f. Exhaust ducts shall be provided with ample access doors to facilitate cleaning.

g. Belts shall not enter any spray area unless the belt and pulley within the spray area is completely enclosed.

#### **15-6. Fire Protection Equipment Required.**

a. Spray areas shall be protected with an approved automatic fire extinguishing system.

b. In sprinklered buildings, the automatic sprinkler system in rooms containing spray application operations shall conform to Chapter 7 of NFPA 33 and any applicable requirements of this section.

c. Water supply for sprinklers in rooms containing spray-finishing operations shall be sufficient to supply all sprinklers likely to open in one fire without depleting the available water for use in hose streams.

d. Sprinklers protecting spray areas shall be cleaned and protected against over-spray residue so that they will operate quickly in event of fire. If covered, polyethylene or cellophane bags having a thickness of 0.003 inches or less, or thin paper bags shall be used. Coverings shall be replaced and heads replaced with listed heads when covered with residue.

e. An adequate supply of suitable portable fire extinguishers shall be installed near all spray areas.

**15-7. Operations and Maintenance.** Spraying shall not be conducted outside of predetermined spray areas, and all provisions of this regulation applying to spray areas shall be strictly followed.

a. All spray areas shall be kept free from the accumulation of deposits of combustible residues. Combustible coverings (thin paper, plastic, etc.) and strippable coatings may be used to facilitate cleaning operations in spray areas. If residue accumulates to excess in booths, duct or duct discharge points or other spray areas, then all spraying operations shall be discontinued until conditions are corrected.

b. Maintenance procedures shall be established to ensure replacing over-spray collector filters before excessive restriction to airflow occurs. Over-spray collectors shall be inspected after each period of use and clogged filters discarded and replaced. All discarded over-spray collector filters shall be immediately removed to a safe, well-detached location or placed in a water-filled metal container and disposed of at the close of the day's operation unless maintained completely in water.

c. Approved metal waste cans shall be provided wherever rags or waste are impregnated with sprayed material and all such rags or waste deposited therein immediately after use. The contents of waste cans shall be properly disposed of at least once daily at the end of each shift.

d. Employees' clothing contaminated with sprayed material shall not be left on the premises overnight unless kept in metal lockers.

e. Solvents for cleaning operations shall have flash points above 100 degrees F. However, for cleaning spray nozzles and auxiliary equipment, solvents having flash points not less than those normally used in spray operations may be used.

f. "No Smoking" signs in large letters on contrasting color background shall be conspicuously posted with a clearance of at least a 20 foot radius from all spray areas and paint storage rooms.

g. Where maintenance operations involve the use of welding, burning, or grinding equipment, such operations shall be done under the supervision of properly designated personnel provided with adequate fire extinguishing equipment.

#### **15-8. Training.**

a. All personnel involved in spray application in processes covered by this chapter shall be instructed in the potential safety and health hazards, the operational, maintenance, and emergency procedures required and the importance of constant operator awareness.

b. Personnel required to handle or use flammable or combustible materials shall be instructed in the safe handling, storage and use of the materials, as well as the emergency procedures that may be required.

c. All personnel required to enter or to work within confined or enclosed spaces shall be instructed as to the nature of the hazard involved, the necessary precautions to be taken, and in the use of protective and emergency equipment required.

d. All personnel shall be instructed in the proper use, maintenance and storage of all emergency, safety or personal protective equipment that they may be required to use in their normal work performance.

e. The training database shall be the method used to record the type and date of mandatory training provided to each individual involved in these processes.

## Chapter 16

### Welding, Cutting and Use of Torches

**16-1. General.** Welding, cutting, and use of torches shall comply with this chapter and NFPA 51B, Standard for Fire Prevention During Welding, Cutting, and Other Hot Work.

**16-2. Special Definitions.**

a. **Authorized Individual.** A person specifically trained by the fire department and given the authority to perform hot work without the fire department written approval. This does not include hot work involving the presence of explosives, flammable and combustible liquids, combustible dusts or dip tank areas.

b. **Permitted Confined Space** - An enclosed space which is large enough for a person to enter and perform work, may have limited or restricted means for entry or exit, is not designed for continuous human occupancy and has one or more of the following characteristics:

(1) Contains, or has a known potential to contain, a hazardous atmosphere.

(2) Contains a material with the potential for engulfment.

(3) Is constructed to make it possible for an entrant to be trapped or asphyxiated by inwardly converging walls, be trapped because a floor slopes downward and tapers to a smaller cross-section, and contains any other recognized, or potentially serious safety or health hazard.

**16-3. Fire Prevention Precautions.** The fire department and Safety Office shall approve all proposed layouts before the relocation or establishment of any welding or cutting operation.

**16-4. Permissible Areas.** Cutting or welding shall not be permitted in the following situations:

a. Areas where a fire hazard imposes a threat to property or safety of personnel.

b. In sprinklered buildings while such protection is impaired, except when authorized by the fire department.

c. In the presence of explosive atmosphere (mixtures of flammable gases, vapors, liquids, or dusts with air) or explosive atmospheres that may develop inside unclean or improperly prepared drums, tanks, or other containers and equipment that have previously contained such materials or that may develop in areas with an accumulation of combustible dusts.

d. Areas near the storage of large quantities of exposed, readily ignitable materials such as bulk sulfur, baled paper or cotton.

**16-5. Permits.**

a. Before cutting or welding is permitted, the area shall be inspected by the individual responsible for authorizing cutting and welding operations.

b. Cutting and welding equipment to be used shall be in satisfactory operating condition and in good repair.

c. Where combustible materials such as paper clippings, wood shavings, or textile fibers are on the floor, the floor shall be swept clean for a radius of 35 feet. Combustible floors (except wood on concrete) shall be kept wet, covered with damp sand or protected by fire-resistant shields. Where floors have been wet down, personnel operating arc welding or cutting equipment shall be protected from possible shock.

d. When practical, all combustibles shall be relocated at least 35 feet horizontally from the work site. Where relocation is impracticable, combustibles shall be protected with flameproof covers or otherwise shielded with metal or fire-resistant guards or curtains. Edges of covers at the floor shall be tight to prevent sparks from going under them. This precaution is also important at overlaps where several covers are used to protect a large pile.

e. Openings or cracks in walls, floors or ducts within 35 feet of the site shall be tightly covered to prevent the passage of sparks to adjacent areas.

f. Conveyor systems that might carry sparks to distant combustibles shall be suitably protected.

g. Where cutting and welding is done near walls, partitions, ceiling, or roof of combustible construction, fire-resistant shields or guards shall be provided to prevent ignition. If welding is to be done on a metal wall, partition, ceiling or roof, precautions shall be taken to prevent ignition of combustibles on the other side, due to conduction or radiation, preferably by relocating combustibles. Where combustibles are not relocated, a fire watch on the opposite side from the work shall be provided. Welding shall not be attempted on a metal partition, wall, ceiling or roof having a combustible covering nor on walls or partitions of combustible sandwich-type panel construction.

h. Cutting or welding on pipes or other metal in contact with combustible walls, partitions, ceilings, or roofs shall not be undertaken if the work is close enough to cause ignition by conduction.

i. Fully charged and operable fire extinguishers, appropriate for the type of possible fire, shall be available at the work area. Where hose lines are available, they shall be connected and ready for service.

j. Where welding or cutting is done in close proximity to a sprinkler head, a wet rag shall be laid over the head and then removed at the conclusion of the welding or cutting operation. Special precautions shall be taken to avoid accidental operation of automatic fire detection or suppression systems, e.g. special extinguishing systems.

k. Nearby personnel shall be suitably protected against heat, sparks, slag, etc.

#### **16-6. Fire Watchers.**

a. Fire watchers shall be required by the individual responsible for authorizing cutting and welding when every cutting or welding is performed in locations where other than a minor fire might develop, or any of the following conditions exists:

(1) Appreciable combustible material in building construction or contents closer than 35 feet to the point of operation.

(2) Appreciable combustibles are more than 35 feet away but are easily ignited by sparks.

(3) Wall or floor openings within a 35 foot radius expose combustible material in adjacent areas including concealed spaces in walls or floors.

(4) Combustible materials are adjacent to the opposite side of metal partitions, walls, ceilings or roofs and are likely to be ignited by conduction or radiation.

b. Fire watchers shall have fire-extinguishing equipment readily available and be trained in its use, including practice on test fires.

c. Fire watchers shall be familiar with facilities and procedures for sounding an alarm in the event of a fire.

d. Fire watchers shall watch for fires in all exposed areas and try to extinguish them first only when obviously within the capacity of the equipment available, or otherwise sound the alarm immediately.

e. A fire watch shall be maintained for at least a half hour after completion of cutting or welding operations to detect and extinguish smoldering fires.

#### **16-7. Oxygen-Fuel Gas Systems.**

a. Cylinders permitted inside of buildings shall be stored at least 20 feet from flammable and combustible liquids and easily ignited forms of materials such as wood, paper, oil and grease, and where they will not be exposed to excessive rise in temperature, physical damage or tampering by unauthorized persons.

b. Separate rooms or buildings used for cylinder storage shall be well ventilated.

c. Cylinders shall be secured in a manner to not be easily overturned.

d. Any person using a torch or other flame producing device for removing paint, sweating pipe joints, or similar use in or around any building or structure or combustibles is responsible for the prevention of fire and shall comply the following:

(1) Provide, in a ready state, within 15 feet travel distance of the work being done, either an approved fire extinguisher having a minimum 2A rating or a water hose connected to a reliable water supply. If a water hose is used as the approved extinguisher, it shall be charged and equipped with a suitable nozzle.

(2) Provide shielding, wetting or other approved means to protect combustible material in close proximity of the flame. Approved stored pressure water fire extinguisher shall not be used to wet combustible material.

(3) In all cases, the person operating the torch or a designee shall remain in the immediate vicinity for a minimum of 30 minutes or a period of time sufficient to assure that no fire will result from the work that was done. This person's responsibilities shall include detecting and reporting any fire.

e. Hoses supplying fuel gases to torches, burners, etc., shall be adequate for the intended use and shall be securely attached at both ends. Only hoses approved by the Compressed Gas Association (CGA)

and branded with CGA markings will be considered adequate. Hoses will be protected from excessive wear and abuse. Flash back arrestors shall be installed on all hoses.

f. Open flame torches, burners, etc., shall not be left burning unattended at any time.

g. When torches or burners are not in use, valves will be shut off at the cylinder. All pressure shall be drained from the hoses and tension on regulators released.

h. Cylinders will not be transported without protective caps in place to protect valves. Where cylinders are used as part of a mobile welding shop, suitable frames may be constructed to hold cylinders securely in place and protect valves from damage in case of accident involving the vehicle.

**16-8. Welding in Confined Spaces.** Hot work permits for welding in confined spaces will be issued by the fire department only. Requirements meeting 29 CFR 1910.146, Confined Space shall be in place before the issuance of a hot work permit. No oxygen or fuel gas system may be used to cut an enclosed cylinder such as a 55-gallon drum.



## **Chapter 17**

### **Dust Hazard Operations**

**17-1. General.** The following applies to those operations that produce dust:

- a. The accumulation of dust on electric motors, equipment and structural members shall be removed by vacuum systems. Metallic dust shall be stored in tightly covered metal containers in a cool, dry place.
- b. Every workshop or other premise in which dust is produced as a product, or as a result of operations in the production of other products, shall be equipped and maintained with an approved pneumatic or mechanical dust collection system designed, maintained, and operated in accordance with applicable NFPA codes and standards.
- c. Electrical fixtures shall be of the dust-tight enclosure in accordance with the National Electrical Code.

**17-2. Sanding Operations.**

- a. The first stage filters of sanding booths shall be vacuumed and/or changed frequently.
- b. Second stage filters of sanding booths shall be replaced when they start to deteriorate or become heavily soiled.
- c. Dust collection bags (vacuum cleaners, woodworking machines, etc. will be emptied at the end of each workday).
- d. Sawdust and other dust accumulations will be vacuumed from fixtures, structural members, floors and other locations where it tends to accumulate, as often as necessary to prevent such accumulations from becoming fire hazards.
- e. No metal sanding or grinding will be permitted in a sanding booth without first obtaining a hot work permit.

## Chapter 18

### Safeguards During Building Construction and Demolition Operations

**18-1. General Requirements.** Buildings undergoing construction or demolition operations shall comply with this regulation. Compliance with NFPA 241, Standard for Safeguarding Construction, Alteration and Demolition Operations, is also required for items not specifically addressed herein.

- a. A fire protection plan shall be established where required by the fire department.
- b. Temporary wiring shall comply with the National Electric Code.
- c. Cutting and welding shall comply with Chapter 17 of this regulation.

### 18-2. Fire Safety During Construction.

a. Fire lanes shall be provided at the start of a project and be maintained throughout construction for access.

b. In all buildings over one story in height, at least one stairway shall be provided in usable condition at all times. This stairway shall be extended upward as each floor is installed in new construction and maintained for each floor remaining during demolition. The stairway shall be lighted. During construction, the stairway shall be enclosed if the building exterior walls are in place.

**18-3. Water Supply.** Water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible material accumulates. There shall be no delay in the installation of fire protection equipment.

a. The suitability, distribution and maintenance of extinguishers shall be in accordance with NFPA 10, Standard for Portable Fire Extinguishers. At least one approved fire extinguisher shall also be provided in plain sight on each floor at each usable stairway. Suitable fire extinguishers shall be provided on manned equipment utilizing liquid fuel.

b. Smoking shall be prohibited, except in those areas approved by the fire department.

c. Accumulations of combustible waste material, dust and debris shall be removed from the structure and its immediate vicinity at the end of each work shift or more frequently as necessary for safe operations.

d. Rubbish shall not be burned on the premises.

e. Good housekeeping shall be maintained at all times.

### 18-4. Scaffolding, Shoring and Forms.

a. Accumulations of unnecessary combustible forms or form lumber shall be prohibited. Combustible forms or form lumber shall be brought into the structure only when needed. Combustible forms or form lumber shall be removed from the structure as soon as stripping is complete. Those portions of the structure where combustible forms are present shall not be used for the storage of other combustible building materials.

b. During forming and stripping operations, portable fire extinguishers or charged hose lines shall be provided to protect adequately the additional combustible loading.

#### **18-5. Flammable and Combustible Liquids.**

a. Storage of flammable and combustible liquid shall be in accordance with NFPA Standard 30, Flammable and Combustible Liquids Code, with the following special provision: Storage of Classes I and II liquids shall not exceed 60 gallons.

b. Storage areas shall be kept free of weeds, debris and combustible materials not necessary to the storage.

c. Open flames and smoking shall not be permitted in flammable and combustible liquid storage areas. Such storage areas shall be appropriately posted as "NO SMOKING" areas.

d. Class I liquids shall be kept in approved safety containers.

e. Class I liquids shall only be dispensed where there are no open flames or other sources of ignition within the possible path of vapor travel.

**18-6. Temporary Heating Equipment.** Temporary heating equipment shall be listed and shall be installed, used, and maintained according to the manufacturer's instructions.

a. Chimney or vent connectors, where required from direct fired heaters, shall be maintained at least 18 inches from combustibles and shall be installed in accordance with NFPA 211, Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances.

b. Oil-fired heaters shall comply in design and installation features with NFPA 31, Standard for the Installation of Oil-Burning Equipment.

c. Fuel supplies for liquefied petroleum gas-fired heaters shall comply with NFPA 58, Standard for the Storage and Handling of Liquefied Petroleum Gas Code and NFPA 54, National Fuel Gas Code.

d. Refueling operations shall be conducted in an approved manner.

e. Heating devices shall be situated so that they are not likely to overturn and shall otherwise be installed in accordance with their listing, including clearance to combustible material, equipment or construction.

f. Temporary heating equipment, when utilized, shall be monitored and maintained by properly trained personnel.

#### **18-7. Alteration of Buildings.**

a. Where the building is protected by fire protection systems, such systems shall be maintained operational at all times during alteration. Exception: Where alteration requires modification of a portion of the fire protection system, the remainder of the system shall be kept in service and the fire department shall be notified. When it is necessary to shut down the system, the fire department shall have the

authority to require alternate measures of protection until the system is returned to service. The fire department shall be notified when the system is shut down and when returned to service.

b. All required exit components should be maintained in accordance with this regulation as deemed necessary by the fire department.

c. Fire resistive assemblies and construction shall be maintained.

#### **18-8. Flame Permit Requirements**

a. Before cutting, welding, and open flame soldering is permitted, the Fire and Emergency Services Division will be notified, preferably 24 hours in advance. Before the worksite is inspected, the activity performing the work and the activity who is responsible will assure the area is free from explosive atmospheres (mixtures of flammable gases, vapors, liquids, or dust with air), or explosive atmospheres that may develop inside uncleaned or improperly prepared drums, tanks, or other containers and equipment which have previously contained such materials, or that may develop in areas with an accumulation of combustible dust. The Fire and Emergency Services Division will inspect the area and issue the DA Form 5383-R and post it at the worksite if the area is fire safe. After the work is performed, the Fire and Emergency Services Division will be notified to make an inspection (recheck) and pick up the permit.

b. No welding and cutting will be done within a radius of 35 feet from combustible material and 50 feet from flammable liquids.

c. Oxygen and acetylene cylinders shall be placed at a safe distance from the work. Valves at the cylinders and at the torch shall be shut off at lunch periods and during other appreciable periods of time when the torches are not in use. All oxygen/acetylene cylinders will be equipped with a back flash check valve. All cylinders, full and empty, must be secured in an upright position and must never be stored with the fuel source.

d. Where feasible, the floor should be wet down within a radius of 35 feet.

## Chapter 19

### Electrical Requirements

**19-1. General Requirements.** The National Electrical Code (NFPA Standard 70) requirements will be considered the minimum standards for installation and maintenance of all electrical equipment and appliances, including portable electrical appliances and all electrically operated hand tools.

**19-2. Electrical Equipment and Appliances.** Electrical equipment and appliances will only be used for the purposes for which designed by the manufacturer and operated in accordance with manufacturer's instructions. Improvised electric wiring or fabricating of electrical equipment or appliances is not authorized except in approved testing or research projects requiring the fabrication of electrical equipment necessary to conduct the project.

a. Metal plugs, jumpers, coins, light bulbs or other material will not be used in lieu of approved type fuses. Repetitive or frequent blowing of fuses or circuit breakers will be promptly reported for repairs.

b. All flexible electrical cords will not be used as follows:

- (1) A substitute for fixed wiring, run through holes in walls, ceilings, or floors.
- (2) Run through doorways, windows or similar openings.
- (3) Attached to building surfaces.
- (4) Concealed behind building walls, floors or ceilings.
- (5) Run under rugs.
- (6) Subjected to electrical loads in excess of their rated capacity.
- (7) Run across floors without protection from pedestrian traffic.
- (8) Wrapped around pipes or other metal objects.

c. Coffee makers, teapots and water heating appliances with integral heating units must be UL listed, including cord. They must not be placed on combustible surfaces unless sheet metal or other noncombustible material protects such surfaces.

d. At the end of each workday, persons using or responsible for electrical tools and heat producing appliances will disconnect the electrical current by pulling the plug. AT NO TIME WILL THEY BE LEFT CONNECTED WHEN THE BUILDING IS UNOCCUPIED.

e. The use of timers on any heating appliance such as coffee makers, hot plates, etc. is prohibited.

## **Appendix**

### **References**

AR 15-6, (Procedure for Investigating Officers and Boards of Officers)

AR 385-10 (The Army Safety Program)

AR 385-40 (Accident Reporting and Records)

AR 385-55 (Prevention of Motor Vehicle Accidents)

AR 385-64 (U.S. Army Explosive Safety Program)

AR 405-45 (Real Property Inventory Management)

AR 420-90 (Fire and Emergency Services)

AR 700-68 (Storage and Handling of Compressed Gases and Gas Liquids in Cylinders, and of Cylinders)

AR 735-5 (Policies and Procedures for Property Accountability)

LEAD-P 385-4 (Requirements for Security, Safety, and Fire Prevention for Contractors Performing Work on Letterkenny Army Depot and Savanna Army Depot Activity)

LEAD-R 385-1 (LEAD Safety and Occupational Health Program)

TM 38-400 (Joint Service Manual (JSM) for Storage and Materials Handling)

UFC 3-600-01, Design: Fire Protection Engineering for Facilities

UFC 3-600-02, Operations and Maintenance: Inspection, Testing, and Maintenance of Fire Protection Systems

NFPA Codes and Standards

Uniform Building Code

Uniform Fire Code

Underwriters' Laboratories UL Directories

## Glossary

**Activity Fire Marshal** - Any responsible person having knowledge and given authority to handle fire prevention, selected from the principal organization or activity of each area.

**Addition** - An extension or increase in floor area or height of a building or structure.

**Alternative** - A system, condition, arrangement, material or equipment submitted to the fire department as a substitute for a Code or regulation.

**ANSI/ASME** - An American National Standards Institute publication, sponsored and published by the American Society of Mechanical Engineers.

**Approved** - Acceptable to the fire department as the authority having jurisdiction.

**Assembly Occupancy** - Assembly occupancies include, but are not limited to, all buildings or portions of buildings used for gathering together 50 or more persons for such purposes as deliberation, worship, entertainment, eating, drinking amusement, or awaiting transportation. Assembly occupancies include:

Assembly Halls  
Auditoriums  
Conference Rooms  
Restaurants

Occupancy of any room or space for assembly purposes by less than 50 persons in a building of other occupancy and incidental to such other occupancy shall be classed as part of the other occupancy and be subject to the provisions applicable thereto.

**Authority Having Jurisdiction** - The organization, office or individual responsible for "approving" equipment, an installation or a procedure. Normally, this would be the Fire and Emergency Services Division .

**Automatic Fire Extinguishing System** - Any system designed and installed to detect a fire and subsequently discharge an extinguishing agent without the necessity of human intervention.

**Basement** - A story with more than 50 percent of its perimeter below grade.

**Building** - Any structure used or intended for supporting or sheltering any use or occupancy. The term building shall be construed as if followed by the words "or portions thereof".

**Building Fire Marshal** - a responsible person having knowledge to handle fire prevention in a building or activity that cannot be adequately controlled by the Activity Fire Marshal.

**Business Occupancies** - Business occupancies are those used for the transaction of business (other than that covered under Mercantile), for the keeping of accounts and records, and for similar purposes. Minor office occupancy incidental to operations in another occupancy shall be considered as a part of the predominating occupancy and shall be subject to the provisions of this regulation that apply to the predominant occupancy.

**CFR** - The Code of Federal Regulations of the United States Government.

**Combustible** - Capable of undergoing combustion.

**Combustible Fiber** - Any material in a fibrous or shredded form that will readily ignite when heat sources are present.

**Combustible Liquid** - A liquid having a flash point above 100 degrees Fahrenheit and below 200 degrees Fahrenheit. Combustible liquids are subdivided.

**Combustible Waste** - Combustible or loose waste materials that are generated by an establishment or process and, being salvageable, are retained for scrap or reprocessing on the premises where generated or transported to a plant for processing. These include, but are not limited to, all combustible fibers, hay, straw, hair, feathers, down, wood shavings, turnings, all types of paper products, soiled cloth trimmings and cuttings, rubber trimmings and buffings, metal fines, and any mixture of the above items, or any other salvageable combustible waste materials.

**Combustion** - A chemical process that involves oxidation sufficient to produce light or heat.

**Construction Documents** - Documents that consist of scaled design drawings and specifications for the purpose of construction of new facilities or modification to existing facilities.

**Container** - Any vessel of 60 US gallons or less capacity used for transporting or storing liquids.

**Deluge System** - A fire protection sprinkler system in which the sprinkler heads are always open. The system is controlled by a valve that is operated automatically or by a thermostatically actuated device.

**Detached Storage** - Storage in a separate building or in an outside area located away from all structures.

**Dip Tank** - A tank, vat or container of flammable, combustible or other hazardous liquid in which articles or materials are immersed for coating, finishing, treating or similar processes.

**Dormitories** - Dormitories include buildings or spaces in buildings where group sleeping accommodations are provided for more than 16 persons who are not members of the same family in one room or a series of closely associated rooms under joint occupancy and single management, with or without meals, but without individual cooking facilities.

**Dwelling** - A single unit providing complete and independent living facilities for one or more persons including permanent provisions for living, sleeping, eating, cooking and sanitation.

**Emergency** - A fire, explosion or hazardous condition that poses an immediate threat to the safety of life or damage to property.

**Existing Condition** - Any situation, circumstance or process that was ongoing.

**Evacuation Alarm** - An alarm to warn occupants of an activity to leave the area.

**Exit** - That portion of a means of egress that is separated from all other spaces of the building or structure by construction or equipment as required in the Life Safety Code to provide a protected way of travel to the exit discharge. Exits include exterior exit doors, exit passageways, horizontal exits, and separated exit stairs or ramps.



**Exit Access** - That portion of a means of egress that leads to an exit.

**Exit Discharge** - That portion of a means of egress between the termination of an exit and public way.

**Fire Break** - An open, clear area maintained through ground cover such as grass, brush, and trees to prevent the spread of fire.

**Fire Compartment** - A space within a building that is enclosed by fire barriers on all sides, including the top and bottom.

**Fire Door Assembly** - Any combination of a fire door, frame, hardware and other accessories that together provide a specific degree of fire protection to the opening.

**Fire Hazard** - Any situation, process, material or condition that, on the basis of applicable data, may cause a fire or explosion or provide a ready fuel supply to augment the spread or intensity of the fire or explosion and that poses a threat to life or property.

**Fire Hydrant** - A valved connection on a water supply system having one or more outlets used to supply hose and fire department pumpers with water.

**Fire Lane** - The road, path or other passageway developed to allow the passage of fire apparatus through congested areas (both built-up and woodland).

**Fire Protection System** - Any fire alarm device or system, or fire extinguishing device or system, or combination thereof, designed and installed for detecting, controlling, or extinguishing a fire or otherwise alerting occupants, the fire department, or both that a fire has occurred.

**Fire Resistive** - Material and design of building construction meant to withstand the maximum effect of a fire for a specific period.

**Fire Retardants** - Liquids, solids or gases that tend to inhibit combustion when applied on, mixed in, or combined with combustible materials.

**Fire Watcher** - A person assigned to be in an area for the express purpose of notifying the fire department of an emergency, preventing a fire from occurring, extinguishing small fires, or protecting the public from fire or life safety dangers addressed in this regulation. Specific requirements for personnel, their training and any equipment are found in the appropriate sections of this regulation.

**Flame Spread** - The propagation of flame over a surface.

**Flame Spread Rating** - The comparative performance of fire travel over the surface of a material when tested in accordance with the provisions of NFPA 255, Standard Method of Test of Surface Burning Characteristics of Building Materials.

**Flammable Liquid** - Liquids that have a flash point below 100 degrees Fahrenheit.

**Fusible Link** - A connecting link device that fuses or melts when exposed to heat.

**Floor Area, Gross** - Gross floor area shall be the floor area within the inside perimeter of the outside walls

of the building under consideration with no deduction for hallways, stairs, closets, thickness of interior walls, columns, or other features. Where the term area is used elsewhere in this regulation, it shall be understood to be gross area unless otherwise specified.

**Floor Area, Net** - Net floor area shall be the actual occupied area, not including accessory unoccupied areas or thickness of walls.

**Ground Kettle** - A container that may or may not be mounted on wheels and is used for heating tar, asphalt or similar substances.

**Hazardous Material** - Any material that poses an unreasonable risk to the health and safety of persons and/or the environment if it is not properly controlled during handling, storage, manufacture, processing, packaging, use, disposal or transportation.

**Highly Volatile Liquid** - A liquid with a boiling point of less than 68 degrees Fahrenheit.

**Horizontal Exit** - A horizontal exit is a way of passage from one building to an area of refuge in another building on approximately the same level, or a way of passage through or around a fire barrier to an area of refuge on approximately the same level in the same building that affords safety from fire and smoke from the area of incidence and areas communicating therewith.

**Incident Commander** - The fire department official in charge of an emergency incident.

**Indicating Valve** - A valve that has components that shows if the valve is open or closed. Examples are OS&Y gate valves and underground gate valves with indicator posts.

**Industrial Occupancies** - Industrial occupancies include factories making products of all kinds and properties devoted to operations such as processing, assembling, mixing, packaging, finishing or decorating and repairing. Industrial occupancies include:

Laundries	Factories of all kinds
Power Plants	Pumping Stations
Gas Plants	Refineries
Hangars	Sawmills
Chemical Labs	Telephone Exchanges

**Initiating Device Circuit** - A circuit to which automatic or manual initiating devices are connected where the signal received does not identify the individual device operated.

**Isolated Storage** - Storage in a different storage room or in a separate and detached building located at a safe distance.

**Labeled** - Equipment or materials to which has been attached a label, symbol or other identifying mark of an organization acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

**Listed** - Equipment or materials included in a list published by an organization acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of listed equipment or materials and whose listing states either that the equipment or material

meets appropriate standards or has been tested and found suitable for use in a specified manner.

**May** - Term used to state a permissive use or alternative method to a specific requirement.

**Means of Egress** - - A means of egress is a continuous and unobstructed way of exit travel from any point in a building or structure to a public way and consists of three separate and distinct parts: the exit access, the exit, and the exit discharge. A means of egress comprises the vertical and horizontal travel and shall include intervening rooms, spaces, doorways, hallways, corridors, passageways, balconies, ramps, stairs, enclosures, lobbies, escalators, horizontal exits, courts and yards.

**Means of Escape** - A way out of a building or structure that does not conform to the strict definition of means of egress but does provide an alternate way out.

**NFPA** - National Fire Protection Association

**Occupancy** - The purpose for which a building or portion thereof is used or intended to be used.

**Occupant Load** - The total number of persons that may occupy a building or portion thereof at any one time.

**OSHA** - Occupational Safety and Health Administration.

**Patch Kettle** - Any pot or container with a capacity of less than 6 gallons used for preheating tar, asphalt, pitch or similar substances for the repair of roofs, streets, floors, pipes or similar objects.

**Permit** - A document issued by the authority having jurisdiction for authorizing performance of a specified activity.

**Post Indicator Valve (PIV)** - a post type valve which provides a visual means of indication "open" or "shut" position. Found on the supply main of installed fire protection systems.

**Process** - The manufacturing, handling, blending, conversion, purification, recovery, separation, synthesis, or use, or any combination, of any commodity or material regulated by this regulation.

**Public Way** - Any street, alley or other similar parcel of land essentially open to the outside air, deeded, dedicated or otherwise permanently appropriated to the public for public use and having a clear width and height of not less than 10 feet.

**Safety Can** - An approved container of not over 5-gallon capacity having a spring closing lid and spout cover.

**Segregated** - Physically separated from other materials by adequate space, walls, or partitions and in accordance with the recommendations of the manufacturer of the stored material.

**Self-Closing** - Equipped with an approved device that will ensure closing after having been opened.

**"Shall"** - Indicates a mandatory requirement.

**Should** - Indicates a recommendation or that which is advised but not required.

**Smoke Detector** - A device that senses visible or invisible particles of combustion.

**Spray Booth** - A power ventilated structure of varying dimensions and construction provided to enclose or accommodate a spraying operation and to confine and limit the escape of spray vapor and residue and to exhaust it safely.

**Standard** - A document containing only mandatory provisions using the word "shall" to indicate requirements.

**Sprinkler Connection** - A connection used by the fire department for increasing the water supply and pressure to a sprinkler system.

**Standpipe System** - A wet or dry system of piping, valves, outlets, and related equipment designed to provide water at specified pressures and installed exclusively for the fighting of fires and classified as Classes I, II and Class III.

**Storage Occupancies** - Storage occupancies include all buildings or structures utilized primarily for the storage or sheltering of goods, merchandise, products, vehicles or animals. Storage occupancies include:

Barns	Parking Structures
Bulk Oil Storage	Stables
Cold Storage	Truck Terminals
Freight Terminals	Warehouses

Minor storage incidental to another occupancy shall be treated as part of the predominant occupancy.

**Temporary Wiring** - Approved wiring for power and lighting during a period of construction, remodeling, maintenance, repair or demolition, and decorative lighting, carnival power and lighting, and similar purposes.

**UL** – Underwriters Laboratories

**Unit Fire Marshal** - A responsible person having knowledge to handle fire prevention in an area within a building that cannot be adequately controlled by the building fire marshal.